BUREAU OF HYGIENE AND TROPICAL DISEASES.

TROPICAL DISEASES BULLETIN.

Vol. 28.] 1931. [No. 8

DENGUE AND PAPPATACI FEVER.

LORANDO (N.) & CHANIOTIS (N.). Sur la dernière épidémie de dengue en Grèce: faits cliniques et épidémiologiques. [**The Last Dengue Epidemic in Greece.**]—*Rev. Méd. et Hyg. Trop.* 1931. Jan.–Feb. Vol. 23. No. 1. pp. 23–31. With 3 charts in text. [14 refs.]

It has been suggested that the disease in the 1928 epidemic of dengue in Greece differed clinically from that of the epidemics in southern Europe in the years 1883–89. The authors have studied the earlier records and find that there were indeed certain differences in the clinical picture. In the recent epidemic the temperature charts showed as a rule continuous fever for about six days with occasionally a slight remission of a degree or so on or about the third day, whereas the charts of 1883 show an actual intermission on the 3rd day followed after 24 hours or so by a sharp recrudescence of fever and other symptoms. In 1928 haemorrhages and albuminuria were common; this was not so in the earlier epidemics. Again, fatal cases were fairly numerous in 1928 but were very few in 1883–89.

As regards the epidemiology there are still some observers who think that the infection can be carried by means of discharges from the patient or possibly by the desquamated skin. The authors have studied that the infection is carried in nature from person to person only by means of stegomyia bite. In support they cite one or two instances: A medical man practising in Athens sent his wife and family to a stegomyia-free district as soon as dengue broke out in the city; a few weeks later he contracted dengue and his wife returned to look after him; two days after her return again to the country she became ill with dengue and was nursed by the servants and others in the house, none of whom contracted the disease, nor did anyone else in this district; some time later one of these servants went to Athens and in six days became ill with dengue. Again, in a small town in a stegomyia-free district 20 cases of dengue were reported; investigation showed that all these people had recently come from Athens for the holidays. No one else in the town developed dengue. In the opinion of the authors in these epidemiological observations the possibility of infection by contact is excluded.

D. Harvey.

(18319) Wt P5/68 1,875 8/31 H & Sp Gp 52

PIROT (R.). Dengue d'extrême-Orient et dengue du bassin mediterranéen. [**Dengue of the Far East and of the Mediterranean.**]—*Rev. Prat. Malad. des Pays Chauds.* 1930. Apr. Vol. 10. No. 4. pp. 151–158, 161–166. [51 refs.]

The author considers that many "fevers of uncertain origin" in the tropics are really atypical dengue, i.e., sporadic cases arising in a population partially immunized by previous attacks. That true dengue (identical with the fever as it occurred in Greece) may and does arise in the tropics he is convinced and refers to a paper describing an outbreak of typical dengue on ships of the French Navy in Saigon Harbour in 1926 [this *Bulletin*, Vol. 24, p. 628].

The interesting point of this outbreak was that a period of eighteen days elapsed between the occurrence of the first case and the beginning of the outbreak aboard the ships, in which some 90 per cent. of the personnel, all susceptible people, suffered. This long incubation period is explained by the author in the light of the work of SILER in America and BLANC in Greece as being made up as follows: three days when the patient was infective for the mosquito, eleven days incubation for the virus in the mosquito and five to six days incubation of the disease in the susceptible people.

The author gives a detailed account of the symptoms of these cases which agrees in every respect with that of the Athens cases.

On the other hand when the disease spread to the shore its advance was slow and there were gaps in its distribution due to the presence of immune or partially immune native inhabitants or old settlers, but wherever there were groups of new arrivals, the disease spread rapidly and practically all were attacked.

The chief points in the clinical picture are the temperature charts with recrudescence, the temperature-pulse ratio, the leucopenia with relative mononucleosis and the nature of the rash.

D. H.

HUSSAMEDDIN. La dengue en 1928–29 en Turquie. [**Dengue in Turkey, 1928–9.**]—*Bull. Office Internat. d'Hyg. Publique.* 1930. July. Vol. 22. No. 7. pp. 1356–1357.

The epidemic of dengue in Greece in 1928 spread to Turkey in the same year, first appearing in Fethiye and at Adalia and Smyrna; 455 cases in all were noted. It ceased entirely in January 1929. In view of the prevalence of Stegomyia it was feared that there would be a recrudescence in the following summer and vigorous anti-mosquito measures were undertaken. Only 79 cases were, however, observed and none at all since.

D. H.

MORGAN (E. L.). **Dengue (?): Report on an Unusual Epidemic in the Murrumbidgee River Basin.**—*Rep. Director-General of Public Health New South Wales for Year 1929.* pp. 113–115. [10 refs.]

In 1928 in the Riverina district of New South Wales there was an outbreak of a disease which resembled mild dengue. In most cases the chief symptoms were joint pains and a herpetic or morbilliform

eruption. The temperature chart did not resemble that of typical dengue and in some cases there was no fever at all. The majority of the medical men considered that the disease was mild dengue, a disease not previously recorded from this district which is about 250 miles south of the lowest known southern limit at which *Aedes argenteus* has been found. However, other mosquitoes of this genus are numerous in the locality, for instance *Ae. annulipes* and *Ae. theobaldi*, and it is quite possible that one or other of these can transmit the disease.

D. H.

AUBIN. A propos des dengues exotiques. [**Dengue in the Tropics.**]—*Presse Méd.* 1930. Aug. 9. Vol. 38. No. 64. pp. 1078–1079. With 4 text figs.

It has been suggested that the dengue-like fevers of the tropics are not the same as the disease which caused the epidemic in Greece in 1928. The author does not agree; he gives temperature charts of cases which he has met in French Indo-China the symptoms of which were typical of dengue. In his view sporadic cases of dengue occur in small groups throughout the year in the tropics with the result that the population has an acquired resistance, whereas in the Mediterranean area the cities are free from dengue for five, ten or twenty years, and when a case is introduced the disease spreads like a fire through the non-immune population.

D. H.

MÉLANIDI (C.) & STYLIANOPOULO (M.). La dengue en pathologie vétérinaire. [**Dengue in Veterinary Pathology.**]—*Rev. Gén. de Méd. Vét.* 1930. Oct. 15. Vol. 39. No. 466. pp. 640–643. [6 refs.]

The authors refer to articles published recently describing a dengue-like fever in animals, especially cattle and horses. In 1927 a fever lasting three to four days was noted in the horses of the Cavalry in Athens. It preceded cases of dengue in man. A few cc. of blood taken from horses at the height of the fever produced a similar fever when injected into healthy horses. During the epidemic of dengue in the city no cases of fever were noted in horses or other animals. 10 cc. of blood from typical cases of dengue taken at the height of the fever and inoculated into horses gave no result.

D. H.

SPYROPOULOS (Nicolas J.). La dengue chez l'enfant. (Pandémie d'Athènes de 1928.) [**Dengue in the Child in the Athens Epidemic.**]—*Acta Paediatrica.* 1930. Aug. 18. Vol. 10. No. 1–2. pp. 59–66. With 3 text figs.

It has been stated that young children are more resistant to dengue than adults but in the Athens epidemic this was not so; all ages were equally attacked. In small children the onset was frequently accompanied by vomiting and convulsions, symptoms rare in the adult. The initial rash was well marked, especially on the face. The children looked as if they had just been in a very hot bath. In small children the pains in bones and muscles were not noted but in older children headache was a constant symptom. Haemorrhagic symptoms were less common than in adults. The mortality even in the newly born was less than in adults.

D. H.

Pamboukis (Georg). Denguefieber und Nervensystem. [**Dengue and the Nervous System.**]—*Schweiz. Arch. f. Neurol. u. Psych., Arch. Suisses de Neurol. et Psych.* 1930. Vol. 26. No. 1. pp. 51–62. [31 refs.]

The author cites a case under his own observation of a man who had suffered from tachycardia for many years; he contracted influenza and the tachycardia was markedly aggravated; in 1928 he contracted dengue and instead of tachycardia had bradycardia with a pulse rate of 60–70. In convalescence the tachycardia returned.

Cases with high blood pressure showed a remarkable lowering of pressure during an attack of dengue. This is probably due to a dilatation of the peripheral blood vessels. In the case of a man who had suffered from symptoms of angina pectoris for some years an attack of dengue was followed by complete freedom from angina. A patient in whom arteriosclerosis of the coronary arteries was present also enjoyed freedom from attacks after dengue.

Several instances of improvement in cases of central nervous diseases during and after an attack of dengue are recorded. For instance, hemiplegia, Parkinsonism following encephalitis, epilepsy, etc.; this action of the dengue fever toxin is compared with that of malaria on G.P.I. The author considers that the toxin acts therapeutically on these cases (1) by its action on the lymphocytes; (2) by its vaso-dilatory action.

D. H.

Joannidès (Georges Sp.). L'examen morphologique du sang dans la fièvre dengue. [**Blood Examination in Dengue.**]—*Arch. Inst. Pasteur Hellénique.* 1930. Vol. 2. No. 2. pp. 295–298. [11 refs.]

The author has made a careful examination of the blood cells of cases of dengue in stained films. He could find no evidence of alteration in the red cells and no contained microorganisms. In the large mononuclears and polymorphonuclears he found changes, most pronounced in severe cases, consisting of condensation and fragmentation of the nuclear substance, portions of the nucleus being extruded into the protoplasm. He considers that these effects are due to a leuco-toxin which acts not only directly on the white cells in the blood stream but also on the blood-forming organs, thus accounting for the leukopenia and the presence in the peripheral blood of these damaged cells.

D. H.

Blanc (Georges) & Caminopetros (J.). Comment les faits épidémiologiques, en Grèce, montrent le rôle exclusif joué par le *Stegomyia fasciata* (*Aedes aegypti*) dans la transmission de la dengue. [**Epidemiology of Dengue in Greece. Exclusive Rôle of** *Aedes aegypti*.]—*Arch. Inst. Pasteur Hellénique.* 1930. Vol. 2. No. 2. pp. 277–294. With 7 text figs. (1 map). [14 refs.]

The experimental work of the authors and of previous workers has clearly demonstrated that dengue is transmitted by Aedes and by this mosquito only. In order to convince sceptics the authors undertook the present epidemiological survey in Greece and Macedonia, and they show clearly that the distribution of dengue in these countries coincides exactly with that of Aedes.

A map shows that one central area in Greece is free from Aedes and this area alone escaped the epidemic. In Macedonia also the western area is free from Aedes and also from dengue. The absence of Aedes is

explained by the fact that every village and dwelling has its own stream of running water, no water is stored and so no breeding places are provided. In the other areas running water is not found, water is stored in and about the houses and Aedes are abundant. In the city of Salonica in certain areas Aedes abound ; in other areas the mosquito is not found. Many cases of dengue occurred in the first, none or very few cases in the other areas. Culex and sand flies abounded in all areas in the city. The authors quote three special instances (already referred to in this *Bulletin*, Vol. 26, p. 833) which furnish remarkable evidence as to the rôle of Stegomyia in dengue transmission.

D. H.

Manoussakis (E.). Le mode de transmission de la fièvre dengue. [**The Mode of Transmission of Dengue Fever.**]—*Rev. d' Hyg. et de Méd. Préventive.* 1931. Jan. Vol. 53. No. 1. pp. 18–23. [9 refs.]

There are still some persons who believe in direct transmission of dengue from case to case ; the chief argument advanced being that such an epidemic as that in Greece was too explosive and extensive in its origin to be explainable by the mosquito theory. This would presuppose that practically all the mosquito population of the city had suddenly become infective. But in the opinion of the author for some weeks before the explosive outbreak sporadic cases were cropping up which passed unrecognized, with the result that large numbers of mosquitoes gradually became infective. In 1928 the epidemic apparently commenced towards the end of July, yet sporadic cases were actually noted by the author as early as April and occurred in increasing numbers during May and June. It has also been noted that cases of dengue occurred in Greece during November and December when mosquitoes do not appear but the weather is unseasonably warm. During the experimental work carried out by the author and others in the clinic there was no single instance of direct infection.

D. H.

Snijders (E. P.). Over de overbrenging van de endemische Sumatraansche dengue. [**On the Transmission of the Endemic Dengue of Sumatra.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1931. Mar. 1. Vol. 71. No. 3. pp. 241–249. With 3 graphs in text & 3 figs. on 2 plates. [2 refs.] [Path. Lab., Medan, & Colonial Inst., Amsterdam.]

The relations of dengue and yellow fever have been recently discussed. Accidental laboratory infections with yellow fever show a striking likeness to dengue. The immunity against yellow fever of monkeys (*Cynomolgus*, *Nemestrinus*) from countries where dengue is endemic appears to be an acquired one since young individuals of both species are just as susceptible to yellow fever as the Rhesus from Northern British India, the usual experimental animal.

The author sought to find out whether dengue in the Dutch East Indies is transmitted by Aedes as it is elsewhere and also to obtain a strain of dengue virus for experiments in Holland in connexion with yellow fever, which latter experiments may not be undertaken in the East.

Laboratory cultures of *Aedes aegypti* and *A. albopictus* were obtained. The technique of their breeding, the experimental infection and the transport to Holland of the infected mosquitoes are described.

During July, August and September 1930 a dengue epidemic occurred at Medan. Often a few cases in one house were followed about 10–14 days later by a similar house epidemic next door. There were many typical cases (saddle-back curve, leucopenia, initial and terminal rash, enanthema, long lasting pains in the joints).

Three successful transmission experiments are quoted in detail. After mosquitoes had fed on dengue patients at Medan on the 2nd or 3rd day of the disease and been transported to Holland, 30, 35 and 40 days after the infectious meal, volunteers were exposed to their bites and developed typical attacks of dengue after an incubation of 5–7 days. *A. aegypti* as well as *A. albopictus* carried the infection.

In the discussion following the reading of this paper at the medical society at Medan the question was asked whether dengue fever is distinguishable from "Van der Scheer's fever." The author answered that he had been inclined to make this distinction but that the epidemiological connexion between cases which clinically showed differences urged him to consider the diseases as probably etiologically identical. He proposes to speak of the "dengue group."

W. J. Bais.

PONTANO (Tommaso). Immunitätsprobleme und experimentelle Uebertragung des Denguefiebers. [**Problems of Immunity and Experimental Transmission of Dengue.**]—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1930. Vol. 69. No. 1/2. pp. 146–156. [Clinic for Infectious Diseases, Univ., Rome.]

Dengue cannot be studied by experiment on animals but experimental work has been done on men who had volunteered during the epidemic in Greece. As a result of such studies on twenty-six volunteers the author concludes that:

The virus of dengue is viable in serum taken from cases of the disease and kept at room temperature for two months. No natural immunity was noted. The immunity following an attack of the disease lasted about four months. The incubation period of the disease experimentally produced, whether by intravenous or intramuscular injection, was from 6 to 7 days, with extremes of 9 and 12. The serum from atypical cases produced in some instances cases typical clinically.

D. H.

MARZINOWSKY (E. I.). Sur la lutte contre la dengue. [**Measures against Dengue.**]—*Bull. Soc. Path. Exot.* 1930. Oct. 8. Vol. 23. No. 8. pp. 797–803.

The author refers to the 1928 outbreak of dengue in Athens and the danger of the introduction of the disease into the Soviet Republics. A conference met in Moscow in March 1929 and papers were read on this subject. The conference concluded that the vector of dengue, *Aedes aegypti*, is widespread in the Republic and suggested a number of measures, one being that basins of water might be used as mosquito traps and emptied every four days, other breeding places being regularly eliminated.

D. H.

MERTENS (W. K.). Experimenteele van der Scheer's koorts. (Voorloopige mededeeling.) [**Experimental van der Scheer's Fever.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1931. Mar. 1. Vol. 71. No. 3. pp. 250–259.

Contrary to SNIJDER'S opinion (see above) the author distinguishes Van der Scheer's fever from dengue on account of (1) its endemic rather than epidemic occurrence, (2) its better prognosis, (3) the fact that it especially attacks new comers, whereas dengue makes no exceptions, (4) the absence of long lasting joint pains, (5) the slow pulse in Van der Scheer's fever. [Yet the description given by the author of his experimental cases shows such a similarity to dengue (initial and terminal rash, exanthema, leucopenia, pronounced prostration), and the picture is so variable that this distinction appears hardly justified.]

The author succeeded in infecting individuals at Tjimahi (Java) at an altitude of 2,400 feet, where spontaneous cases of Van der Scheer's fever are rare, either by injection of serum from patients at Batavia or by the bite of experimentally infected mosquitoes. Of 28 serum injection experiments 25 succeeded. Even 0·1 cc. intravenously administered was sufficient. Of 23 experimental infections by means of the bite of *Aedes aegypti* 19 succeeded. The average incubation period was about 6 days. The mosquito needs at least 9 days after the blood meal to become infective. It may remain infective for at least 65 days after the bite. The bite of one mosquito suffices to produce the disease.

Of 5 experiments with *A. albopictus* 4 succeeded. The bites of at least 21 mosquitoes were necessary to cause infection. The intrinsic incubation period of the virus in this species is not yet known.

The virus is filtrable. In the frigidary at 10–15° C. it may be kept for at least 40 days. It may be dried in vacuo and can be kept in this condition for at least 2 months. It is killed by heating (½ hour at 56° C.). It is found in the blood of patients for at least four days in diminishing quantities.

In the mosquito the virus apparently simply increases in quantity and does not undergo any special development. Though infection was not possible by the bite of a freshly infected mosquito, it could be obtained by injection of a filtrate of the bodies of 50 freshly infected mosquitoes, rubbed to an emulsion in serum.

The immunity caused by the disease is not great. Reinfections usually succeeded and always did so if the virus was administered by means of serum injection.

W. J. Bais.

TRABAUD (J.). Les traits cliniques spécifiques de la fièvre de trois jours ou fièvre à phlébotomes. [**Specific Clinical Features of Three Day or Sand Fly Fever.**]—*Bull. Acad. Méd.* 1930. Dec. 30. Year 94. 3rd Ser. Vol. 104. No. 42. pp. 791–795. With 2 charts in text.

The author points to the confusion in the clinical diagnosis of dengue and sandfly fever. He cites the following chief points of difference:—

In three day fever (sandfly fever) the temperature runs to over 40° C. in the course of a few hours and without prodromal symptoms; the following morning it drops a degree or so and reaches normal on the third day.

Three day fever is a congestive fever; this is demonstrated chiefly by the very severe headache and the reddened conjunctivae: the pathognomonic sign.

Three day fever is a neurotropic affection acting chiefly on the posterior portion of the cord and causing severe pains in the muscles and bones; the cerebrospinal fluid is under increased pressure.

There is no rash in sandfly fever in contrast to dengue, and relapses are very rare indeed. Convalescence is slow with a long period of weakness.

D. H.

KREMER (B.). **The Questions of Studying the Pappataci Fever of Crimea.**—*Rev. Microbiol., Epidémiol. et Parasit.* Saratov. 1930. Vol. 9. No. 3. pp. 395–400. [In Russian. English summary.]

The author has made a survey of the Crimea in order to establish the incidence and distribution of sandfly fever. The only species of the fly found in the country are *Phlebotomus papatasii* and *P. perniciosus* var. *tauricus*. The former occurs only in Sebastopol and the adjoining districts and along the railway line as far as Bakhchisarai. Sandfly fever coincides with the distribution of *P. papatasii* and does not occur in any other part of the peninsula, where *P. perniciosus* var. *tauricus* is prevalent. The disease was studied more fully in Sebastopol. Here the principal foci are in the lower parts of the town, overgrown with verdure and protected from wind. The outbreaks of fever occur from the middle of June to the end of September, reaching a maximum in August.

C. A. Hoare.

TRABAUD (J.). Sur le neurotropisme de la fièvre de trois jours. [**Neurotropism of Three Day Fever.**]—*Bull. Acad. Méd.* 1931. Feb. 10. Year 95. 3rd Ser. Vol. 105. No. 6. pp. 218–222. [5 refs.]

The author believes that the headache and pains in the back and limbs in three day fever are evidence of affection of the nervous system by the virus. The headache may be so severe as to simulate meningitis yet the cerebrospinal fluid is found to be normal. The headache and the pain and congestion in the eyes are evidence of congestion of the meninges.

In the same way the author explains the pains in the back and limbs as due to a congestion of the peripheral nerves. This does not affect the joints or bones but chiefly the periarticular tissues, the tendon attachments, muscles and fascia. In this way it differs from the rheumatism virus which attacks the joints and heart, and from dengue which only occasionally is neurotropic and invariably is accompanied by a rash.

D. H.

DIAMANTOPOULOS (Jackob). Denguëfieber und Myxödem.—*Deut. Med. Woch.* 1931. May 15. Vol. 57. No. 20. p. 851.

UNCLASSED FEVERS.

SCOTT (Harold). Le typhus tropical et les maladies connexes. [**Tropical Typhus and its Allies.**]—*Bull. Office Internat. d'Hyg. Publique.* 1930. Aug. Vol. 22. No. 8. pp. 1522–1526. [1 ref.]

A communication presented to the Committee of the "Paris Bureau" by Sir George BUCHANAN, the British delegate.

The term " tropical typhus " has been applied to various maladies which resemble in some respects true typhus but at the same time show important points of difference. They are as a rule met with in tropical zones but also occur in sub-tropical and temperate regions. A classification based on the vector of the disease has been attempted thus : Fevers transmitted by the louse, by the tick and by the mite, but there are varieties which do not fall into any of these categories.

Rocky Mountain fever comes in the second class and also differs from true typhus in crossed immunity experiments. In Malaya there are two types of tropical typhus, the one known as scrub typhus which is probably due to the bite of a mite or tick and in which the Weil Felix reaction is positive with one strain of *Proteus* ; the other occurs almost invariably in the towns and is probably louse borne ; the Weil Felix reaction here is also positive but with a different strain of *Proteus*. The scrub typhus of Malaya resembles in some respects Japanese River Fever whereas the urban type is more allied to Brill's disease.

Indian " tick typhus " is another form of the disease similar in its clinical characteristics and usually with a definite history of tick bite, with a small primary ulcer resembling the " tache noire " of Marseilles fever.

Similar fevers have been described in different regions of Africa so far removed as Tunis, Nairobi and the Transvaal. In Palestine also a similar disease has been described as mild typhus with a positive Weil Felix reaction ; lice can be definitely excluded as vectors. Ross in Rhodesia has described a fever resembling the eruptive fever of Marseilles in which the Weil Felix reaction for both strains W and K was negative.

In Australia in the sugar cane plantations a similar fever occurs, to which the local name of " mouse disease" has been given ; here the Weil Felix reaction is found positive and the probable vector is a mite.

In the southern states of North America another type of mild typhus is met with ; this is considered identical with " tabardillo " of Mexico, and the Weil Felix reaction is positive. The infection here as in most of the tropical typhus fevers is not from man to man by the louse but probably from some intermediate host such as the rat or mouse.

Marseilles fever has recently occupied considerable attention ; it differs from Brill's disease in that the monkey reacts to injections of infective human blood whereas the guineapig does not and infection with typhus virus does not render animals immune to infection with Marseilles fever blood. The Weil Felix reaction varies in different patients. A similar fever has already been described in Tunis, and in Rome, Spain and Portugal.

D. Harvey.

MEGAW (J. W. D.). Les fièvres ressemblant au typhus transmises par les tiques. [**Typhus-like Fevers transmitted by Ticks.**]—*Bull. Office Internat. d' Hyg. Publique.* 1930. Aug. Vol. 22. No. 8. pp. 1527–1547. [14 refs.]

A memoir presented to the Committee of the " Paris Bureau " by Colonel GRAHAM, delegate for British India.

The author suggests that the typhus fevers should be classified according to the known vectors, louse, tick or mite, and he is convinced

that those types of fever the vectors of which are not yet known will soon fall into their proper places. Great confusion has already arisen owing to the custom of giving place names to diseases and he cites Rocky Mountain fever, Japanese River fever, Malta fever, Delhi boil as cases in point.

In 1916 at Seth Tal in the Kumaun Hills the author was bitten by a tick and twenty-one days later suffered a severe attack of typhus-like fever; since then other cases have been noted and in this communication those in which there was a definite history of tick bite are described, although in no instance was the tick captured and identified. Accounts of eleven such cases are given and reference is made to those of a similar type described in other parts of the world and already referred to by Dr. SCOTT.

The Weil Felix reaction according to Megaw is negative in cases of tick typhus in India but in one outbreak of nine cases which occurred in a regiment of Gurkhas marching through hilly country in Madras the serum of one case gave a positive Weil Felix reaction in a titre of 1-1000.

D. H.

PLAZY (L.) & MARCANDIER (A.). A propos d'un essai de classification des fièvres typho-exanthématiques. [**Classification of Typhus-like Fevers.**]—*Bull. Soc. Path. Exot.* 1930. June 11. Vol. 23. No. 6. pp. 560–562. [9 refs.]

The authors refer to a recent paper by TOULLEC [*ante*, p. 96] in which he attempts to classify the typhus-like fevers according to the vector. While they agree that it is not possible to separate these fevers on clinical grounds alone, they consider that classification by vector is premature. In their view it is at present possible to say that in cases of true typhus the Weil Felix reaction appears early and is as a rule of a titre greater than 1-2000, whereas in the pseudo-typhus cases it does not become positive till near the end of the fever and is rarely found in higher titre than 1-1000.

D. H.

OLMER. La fièvre exanthématique. [**Eruptive Fever.**]—*Bull. Office Internat. d'Hyg. Publique.* 1930. Aug. Vol. 22. No. 8. pp. 1494–1521. With 7 diagrams and 2 figs. (1 coloured). [Refs. in footnotes.]

This report, communicated by General L'HERMINIER to the Committee of the International Office of Public Health or "Paris Bureau," is a general résumé of the observations of Olmer and his colleagues, treated from the historical, clinical, experimental and epidemiological aspects. With the clinical description is given a very instructive coloured plate showing the eruption on the legs.

All attempts to isolate the causal organism by culture or by inoculation into guineapigs failed but inoculation of the blood of patients taken from the 5th to the 8th day of fever into monkeys produced a definite fever after an incubation period of 7 to 9 days; temperature charts from some of these experiments are given. The fever can be passed from monkey to monkey by inoculation of blood. Guineapigs which had failed to react to blood from these cases showed the usual

reaction after inoculation with typhus blood, and monkeys which had reacted to eruptive fever-blood also reacted later to typhus blood, and vice versa.

In nine cases tested for the Weil Felix reaction five gave a positive reaction from 1-250 to 1-500 and even in one case, 1-1000. The four others gave a titre of 1-100 but no higher.

This fever occurs in the summer and chiefly in July and August, and there is no infection from case to case, although two or more cases may arise in the same house at considerable intervals. No lice or other parasites have been found on the patients and the author is convinced that lice may be definitely excluded as vectors. Lice fed on infected monkeys and ground up and injected into other monkeys did not give rise to any fever. DURAND and CONSEIL have recently shown that infection can be carried by ticks.

The author is strongly of opinion that eruptive fever is not related to typhus or Brill's disease, but agrees that it is similar to the " fièvre boutonneuse " of Tunis.

D. H.

OLMER (D.) & OLMER (Jean). La fièvre exanthématique. Son inoculation, ses portes d'entrée, ses aspects cliniques. [**Eruptive Fever.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1931. Feb. 9. Year 47. 3rd Ser. No. 4. pp. 167–171. [4 refs.]

This is a résumé of previous papers by the same authors. A careful description is given of the primary sore or " tache noire." The authors consider that a diagnosis can be made on the discovery of a typical sore even before the appearance of the rash and that this sore should invariably be carefully sought for as it is one of the cardinal signs of the disease. The rash is fully described. The authors refer to one or two cases in which the typical " tache noire " was seen at the site of a tick bite though fever did not develop. It has also been noted that in one household there may be a typical severe case of the fever with a marked rash and other individuals with only a mild fever lasting 4 or 5 days, with a typical sore and adenitis, but never showing any rash. On the other hand, although rarely, very severe cases may be seen with severe headaches and joint pains, high fever and occasionally meningeal signs. Even these patients practically all recover; the few fatal cases met with being in people who were already suffering from some chronic affection of the heart or kidneys.

D. H.

LEMAIRE (G.). Petite épidémie algéroise de la maladie de Connor et Bruch; papulo-érythème polymorphe infectieux saisonnier à papules rutilantes; synonymes: fièvre boutonneuse de Tunisie, fièvre exanthématique de la région provençale. [**A Small Epidemic in Algiers of the Fever of Connor and Bruch.**]—*Presse Méd.* 1930. Dec. 31. Vol. 38. No. 105. pp. 1801–1804. With 4 charts in text.

Up to date no cases of eruptive fever have been reported from Algiers; the author reports ten such, four in some detail. The fever is obviously identical with that described from Tunis, Marseilles, Rome and elsewhere. After an elaborate and detailed description of the rash, the author suggests that the names given to the disease are not

descriptive and suggests the comprehensive title of this paper, which, however, would certainly not tend to simplify matters. The " tache noire " or primary sore was noted in all ten patients on the lower limbs, suggesting the bite of a crawling insect which had dropped on the ground from its habitual host, a dog or a cat. In one case a small tick, species not determined, was removed from the skin. Two days later this person developed fever and passed through a typical attack ; a small pustule developed at the site of the tick bite and subsequently developed into the true " tache noire." All cases were severe but all recovered.

D. H.

Boinet & Pieri (Jean). Fièvre exanthématique et fièvre boutonneuse. [**Eruptive Fever and Fièvre boutonneuse.**]—*Marseille-Méd.* 1930. June 15. Vol. 67. No. 17. pp. 798–806. [4 refs.]

The authors are apparently not satisfied of the identity of eruptive fever with the Tunisian " fièvre boutonneuse," but the only points of difference they can suggest are :

(1) That the " tache noire " is present in Marseilles fever and not in the Tunis variety. [Raybaud (see below) points out that the " tache noire " is often not noted in the Marseilles fever and is probably the site of the bite of the tick.]

(2) There are slight differences in the character of the rash, which appears commonly on the soles and palms in the Tunis fever but rarely or never in the Marseilles type.

The recent discovery that these fevers can be caused by injection of emulsion of infected ticks should soon settle the question of their identity or non-identity.

D. H.

Védrenne. Observations sur la fièvre exanthématique méditerranéenne. [**Observations on Mediterranean Eruptive Fever.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1930. Dec. 8. Year 46. 3rd Ser. No. 33. pp. 1747–1750. [1 ref.]

The author saw twelve cases of this disease in the summer of 1930 in Cannes. Three typical cases, in women, are described. All kept dogs which were infested with ticks and two of these dogs are said to have died from the infestation. In two of the cases a typical " tache noire " was noted. A sister of the third patient who bathed her dog was bitten by several ticks but did not develop the disease.

D. H.

Gulino (Michele). Su alcuni casi di febbre esantematica, riferibili al tifo esantematico benigno. [**Cases of Eruptive Fever resembling Benign Typhus.**]—*Riv. Sanitaria Siciliana.* 1930. Dec. 1. Vol. 18. No. 23. pp. 1627–30, 1633–36, 1639–42. English summary (8 lines).

Twelve cases are described in some detail, all occurring in Partinico (Palermo), of which the main features were : sudden onset with malaise, fever 39°–40° C. reaching its maximum in 3–4 days with one or more chills, headache and general pains. A rash, macular or papular, at first disappearing on pressure but later persisting, becoming darker,

almost haemorrhagic, appears on the 4th to 6th day and reaches its acme in 2 to 4 days. The spots are discrete and are first seen on the abdomen and submammary regions, soon becoming general. In some patients there is a diffuse reddening of the pharynx, uvula and tonsils. Delirium and hallucinations occur at the height of the fever, which falls by lysis during the last 3 or 4 days; the average duration is 14 days, the limits being 12 to 17 days. Tache noire was not seen. The Weil Felix was positive in 1 of 6 patients tested, to a titre of 1 in 100. There were no fatalities. The condition corresponds very closely with Marseilles fever.

H. H. S.

Raybaud (A.). Comment l'appellerons-nous ? boutonneuse, exanthématique, escharonodulaire. [**The Appellation of Eruptive Fever.**] —*Marseille-Méd.* 1930. June 5. Vol. 67. No. 16. pp. 732–733.

The author agrees that a new name is required for "la maladie de Marseille" but he does not like at all the suggestion of Jorges to call it "fièvre escharo-nodulaire." The escar or "tache noire" is not invariably present and is also to be found in other diseases, for instance plague and Japanese River fever. The rash too is not nodular; this term nodule should be reserved for larger formations such as in leprosy. He considers that as this fever is identical with that described in Tunis twenty years ago under the name of "fièvre boutonneuse" that name should be adopted.

D. H.

Olmer (D.). A propos d'une dénomination fièvre exanthématique ou fièvre boutonneuse. [**The Appellation of Eruptive Fever.**]—*Presse Méd.* 1930. Aug. 16. Vol. 38. No. 66. p. 1110.

Olmer agrees that the Tunisian nodular fever and eruptive fever are one and the same and suggests the name of nodular exanthematous fever, which he considers better than the Tunisian name. He prefers to drop the term "escharo" as the tache noire is not always present and is now generally considered to be simply the site of the infective tick bite.

D. H.

i. Mazet (M.). A propos de la fièvre exanthématique du littoral méditerranéen. [**Eruptive Fever of the Mediterranean Littoral.**]—*Marseille-Méd.* 1930. Nov. 25. Vol. 67. No. 24. pp. 287–289.

ii. Giraud-Costa (Edouard). Un cas d'asthénie cardiaque persistante consécutive à une fièvre exanthématique. [**A Case of Persistent Cardiac Weakness following Eruptive Fever.**]—*Ibid.* p. 289.

iii. Pieri (Jean) & Raybaud (Antoine). Fièvre exanthématique à forme purpurique. [**Purpuric Form of Eruptive Fever.**]—*Ibid.* p. 289.

iv. Audibert (Victor) & Battaglini. Fièvre exanthématique à début blépharo-conjonctival. [**A Case of Eruptive Fever commencing with Blepharitis.**]—*Ibid.* pp. 290–291.

i. The author gives an account of 57 cases of this disease observed by him in the neighbourhood of Nice. In all but two there was a

definite history of association with dogs infested with ticks. Many cases occurred in one area which was infested with rats and the author suggests that these vermin may be intermediaries. The common tick on the dogs was *Ixodes ricinus*. Clinically the cases resembled those met with in Marseilles, but the " tache noire," although carefully looked for, was only found in 20 per cent. In the discussion which followed PIERI pointed out that the " tache noire " was of vital diagnostic importance but probably only appeared when the biting parts of the tick remained in the wound. It was also stated that cases had occurred on board ship when no ticks were present.

ii. A young man of 23 years showed persistent cardiac weakness for 3 months after an attack of fever, characterized by low blood pressure, tachycardia on exertion and dyspnoea with extrasystole but no cardiac murmurs.

iii. In this case, otherwise typical, the rash was definitely purpuric. A " tache noire " was situated on the left thigh.

iv. The case of a woman aged 35 who became suddenly ill with fever, pain in the back and myalgia with severe headache. The following day she complained of itching in the left eye which was reddened ; next day there was oedema of the eyelids, ecchymoses, infection of the conjunctivae, pus in the cul de sacs and inflammation of the lymphatics draining the area with swelling of the glands in front of the ear. Examination of the pus did not help in the diagnosis nor did puncture of the glands. But on the third day the typical rash appeared all over the body and the diagnosis was confirmed ; owing to the extreme swelling of the eyelids it was not possible to determine the presence of the primary sore on the eye. The fever subsided after 15 days and with it the eye symptoms. The patient had no recollection of being bitten by a tick but stated that a day or two before she was taken ill she had removed some ticks from her dog and crushed them with her fingers ; none of the blood had gone into her eye, but she remembered rubbing her eyes with her soiled fingers. There seems, the authors add, little doubt of the diagnosis or of the port of entry of the virus. [A similar case is summarized below, p. 631 in this *Bulletin*.]

D. H.

BLANC (Georges) & CAMINOPETROS (J.). La fièvre boutonneuse en Grèce. [**Eruptive Fever in Greece.**]—*Arch. Inst. Pasteur Hellénique.* 1931. Vol. 2. No. 3. p. 459.

PÉDAROS (D.), CARAGIANOPOULOS (G.) & VALSAMAKI (A.). Observations de cas de fièvre boutonneuse constatés à Volo.—*Ibid.* pp. 460–461.

PIRGIALIS (Apostolos). Deux observations de fièvre boutonneuse faites à Volo.—*Ibid.* pp. 461–464. With 2 charts in text & 1 plate.

Recently a few cases of " fièvre boutonneuse " or eruptive fever have been discovered in Greece. The authors tried to reproduce the disease by inoculation of the tick *R. sanguineus* ; about 100 were collected in the environs of Athens, both adults and nymphs, ground up and the fluid injected into six volunteers ; after an incubation of 7 to 8 days fever developed in all, lasting 12 to 15 days ; in no case, however, was any eruption noted or local reaction at site of injection. Further work is necessary before it is possible to say that this fever was an abortive form of the malady of CONOR. Descriptions of typical examples of

the naturally acquired disease are given ; about 16 in all occurred in the town of Volo. A plate gives a striking reproduction of the rash, in one case showing also a well-marked tache noire.

D. H.

Brumpt (E.). Transmission de la fièvre exanthématique de Marseille par la tique méridionale du chien (*Rhipicephalus sanguineus*). [**Transmission of Eruptive Fever of Marseilles by the Southern Dog Tick.**]—*C.R. Acad. Sci.* 1930. Nov. 10. Vol. 191. No. 19. pp. 889–891.

The author inoculated a volunteer subcutaneously with the filtered fluid from 110 crushed *R. sanguineus* ticks which had originally been collected from dogs in Morocco and bred for at least one year on hedgehogs in the laboratory ; neither local nor general reaction followed, which, in the author's view, shows that eruptive fever is not due to a parasite of the tick itself.

A second subject, inoculated with the proceeds of emulsion of 100 ticks raised from nymphs collected from dogs in the Marseilles pound (fourrière) developed a typical attack of fever a few days later, thus showing that the nymphs collected 56 days earlier had passed on the infection to the adult tick.

In view of the seasonal distribution of the disease it is interesting to note that this tick, becoming adult in October, awaits the warmer spring weather before attaching itself to another host. The author discusses the question of the alternative host of the virus, probably the dog, although this tick is found on many other species of domestic animals, as well as the mouse and rat.

D. H.

Durand (Paul). *Rhipicephalus sanguineus* et virus de la fièvre boutonneuse de Tunisie. [*R. sanguineus* **and Virus of Fièvre Boutonneuse of Tunis.**]—*C.R. Acad. Sci.* 1931. Apr. 7. Vol. 192. No. 14. pp. 857–859. [2 refs.]

The author refers to the work of Conseil and himself and also to that of Brumpt in Marseilles (see above). The author collected ticks (*R. sanguineus*) from a disused dog kennel in the grounds of the Pasteur Institute, Tunis ; no animals had been there which had been in contact with cases of eruptive fever. On 15th December 150 adult ticks were taken, washed in alcohol, in sublimate solution, again in alcohol and finally in distilled water, and then crushed up in sterile saline and the fluid decanted. Part of this fluid was injected into a patient with disseminated sclerosis and part into two Macacus monkeys. On the third day the patient developed fever and on the 4th day of the fever the typical rash appeared spreading all over the body, on the face and on the palms and soles. The two monkeys also developed fever ; both were killed and carefully examined but no signs of any morbid condition could be found.

The patient's serum, tested for the Weil Felix reaction, was negative on December 27th, but on January 3rd was positive in a dilution of 1-50 and on January 11th in 1-100.

Thus it has been shown in Tunis as in Marseilles that the tick *R. sanguineus* apart altogether from human cases of eruptive fever can harbour the virus, which is still active during the cold season of the year.

D. H.

Joyeux (Ch.) & Pieri (J.). Hibernation du virus de la fièvre exanthématique méditerranéenne. [**Hibernation of the Virus of Eruptive Fever.**]—*C.R. Acad. Sci.* 1931. Mar. 16. Vol. 192. No. 11. pp. 705–707.

Eruptive fever is essentially a disease of the warm months. The authors have recently carried out experimental work to discover how the virus is carried over from season to season. They collected in February 1931 two lots of ticks, one lot from the pound (fourrière), the other from the walls of a house where cases of eruptive fever had occurred in the previous summer.

The first lot of ticks, comprising 101 males and 138 females, were rapidly washed in perchloride solution 1-1000, then in distilled water and finally ground up in sterile normal saline, filtered through paper and injected into a patient who was suffering from general paralysis. This man showed a slight rise of temperature on the 8th day but no rash developed. The second lot of ticks, collected from the house, 80 males and 105 females, was first treated with ether and then in the same way as the first lot. The proceeds were then injected into another patient who on the 10th day developed fever which lasted for 8 days and on the third day the typical rash of the disease, somewhat discrete yet characteristic. The authors consider that these experiments show that the virus of the disease remains alive in the tick, *R. sanguineus*, during the cold season, although the fact that only one of the patients showed definite fever and rash might suggest that the virus was of low virulence.

D. H.

Claude (H.) & Coste (F.). La fièvre exanthématique provoquée et son utilisation pour la pyrétothérapie. [**Experimentally produced Eruptive Fever and its Therapeutic Use.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1931. Feb. 9. Year 47. 3rd Ser. No. 4. pp. 188–194. With 6 charts in text.

Conseil and Durand in Tunis in 1930 succeeded in producing a typical attack of the fever in a volunteer by the injection of a mixture of the crushed-up bodies of the tick *R. sanguineus*, but when they attempted to pass on the infection by injection of blood into a second volunteer they failed. Brumpt in Marseilles also succeeded in producing the fever experimentally (above), and the authors of the present paper succeeded in passing on the infection from his case to another volunteer by means of injection of 10 cc. of blood taken on the 7th day of the disease. It occurred to them that a mild fever such as this which could be passed from man to man by means of inoculation might be usefully employed, like malaria, in the treatment of nervous diseases, but without similar risks and difficulties. This idea was favoured by the fact that the volunteer, employed by Brumpt, was suffering from dementia praecox and showed considerable clinical improvement after his attack of fever which did not affect him in any other way. However, on attempting to subinoculate in series they found that the experimentally produced disease became milder at each inoculation and after 3 passages was without effect. Moreover, injection of an emulsion of a smaller number of ticks than that employed by Brumpt produced only a mild attack of fever without the typical eruption. [In two cases it has been reported that the injection of the contents of a single tick into the conjunctiva produced a severe attack of the disease.] The

authors suggest that some method may be found of transmitting the disease in full force and that it might then be employed instead of malaria as a therapeutic measure.

D. H.

Marçon (L.) & Marçon (H.). Sur un cas de fièvre exanthématique après inoculation intraoculaire accidentelle du sang d'une tique. [**A Case of Eruptive Fever following Accidental Inoculation of Blood from a Tick into the Conjunctiva.**]—*Bull. Soc. Path. Exot.* 1930. Nov. 12. Vol. 23. No. 9. pp. 889–891.

The case was that of a farmer aged 62 years who was engaged in ticking his dog [according to the authorities " deticking " is not good English] ; he crushed one fully fed tick between his finger nails and a drop of the extruded fluid lodged in his right eye. The following day he developed an acute conjunctivitis localized specially towards the inner canthus. For the next two or three days he suffered from vague pains in the back and limbs and on the 4th day developed fever. Five days later the typical rash appeared and spread all over the body, and he passed through a severe and typical attack of eruptive fever from which he made a gradual recovery.

The authors look upon the conjunctivitis with chemosis limited to one part of the eye as the initial lesion or ulcer. The Weil Felix reaction was negative ; the authors think that this reaction is usually positive in these cases but they were only able to test the blood on one occasion during the height of the fever ; in all other respects the case was typical.

D. H.

Suarez de Puga (L.) & Colomo de la Villa (G.). Un nuevo caso de fiebre exantematica o enfermedad de Olmer. [**Another Case of Eruptive Fever or Olmer's Disease.**]—*Medicina Países Cálidos.* Madrid. 1930. Nov. Vol. 3. No. 6. pp. 527–534. With 1 text fig. French summary.

A typical case of the form of typhus described by Olmer and Pieri but occurring in Guadalajara (Spain). The conjectured source of infection was the ticks found in considerable numbers on a dog in the patient's home.

H. H. S.

Lewthwaite (Raymond). **Clinical and Epidemiological Observations on Tropical Typhus in the Federated Malay States.**—*Bull. Inst. Med. Res. Federated Malay States.* 1930. No. 1. 42 pp. With 7 charts & 1 folding fig. [13 refs.]

The work covers the period from January 1927 to April 1929, after the retirement of Fletcher from Malaya. One hundred and sixty-four cases were observed, 154 of the " rural " type and 10 of the urban. The two series were identical in the clinical picture and could only be separated on serological and epidemiological grounds. The incubation period, so far as could be determined, lay between 11 and 21 days. The onset was abrupt, with fever, shivering and headache. No initial lesion corresponding to the primary ulcer of Japanese River fever could be found. The fever reached a maximum on the 12th day, declining gradually to normal about the 14th day. The pulse was quickened, a rate of 100 to 110 being usual. The maculo-papular rash appeared on the 4th to the 6th day on the chest, abdomen, flanks and limbs, and in some cases on the face. There was in most cases a characteristic mild suffusion of the eyes and the patients had a dulled

yet anxious expression. Definite mental disturbance was present in 33 per cent. of the cases, manifested in the majority by delirium. The fatality rate was 6·7 per cent. All the cases in both series gave a positive Weil Felix reaction. In fatal cases a slight but definite perivascular infiltration of the smaller pre-capillaries of the brain was noted; within their walls were seen minute diplococcal forms lying usually within the swollen endothelial cells; similar diplococcal forms were noted within the large pyramidal cells of the cerebral cortex.

Epidemiology. The two forms of tropical typhus as defined by FLETCHER can be correlated by laboratory tests and by statistics of occupation. These two forms have been styled the "Urban" and the "Rural" or scrub typhus, and can be sharply differentiated by serological tests, the serum of the urban cases agglutinating the W strain of proteus and the serum of the rural cases the K or Kingsbury strain; in only one instance in this series was there any cross agglutination.

It was also noted that practically all the "W" cases were indoor workers whereas the "K" cases occurred amongst the outdoor labourers on the plantation and, as will be shown later, among a certain section of these outdoor people. Little or no evidence could be obtained of any relation between the amount of the rainfall and the number of cases of the disease nor was there any marked seasonal incidence, cases occurring in nearly equal numbers throughout the year.

The first epidemiological factor of interest discovered was that the great majority of the cases of tropical typhus "K" type on the Palm Oil Estate occurred among the Tamil labourers and only one or two cases in Malays or Chinese; on further investigation it was found that the majority of these Tamils were employed on the particular branch of work known as "pruning"; these pruners cut away the old branches and decayed fruit from around the base of the palm tree; very few Malays or Chinese are employed on this work.

The next highest incidence of cases was among the "weeders" who cut down the lalang (high coarse grass) around the palm tree and also cut a path between the individual palms in a row. It was, however, noted that cases were more numerous among the weeders in relation to their close association with the pruning process; indeed it appeared that in some way or other the unknown vector of the "K" type of tropical typhus finds a nidus in and around the base of the unpruned palm tree and that when this dead growth is hacked away the virus or the vector is scattered on the ground close around the tree. The further away from this source of the disease the workers are employed the fewer become the cases of the disease and it was noted that not a single case of the "K" type occurred among the families of the coolies living in the huts on the estate.

As regards the vector of the disease nothing definite can as yet be stated; 3 cases of tsutsugamushi disease had occurred on this same estate and the mite *Trombicula deliensis* was readily found on trapped rats. It is possible that tropical typhus is also transmitted by a mite and it was noted that enormous numbers of mites were present on the decayed palm branches and fruits but much further investigation is required before either the mite or tick is incriminated. It is unlikely that the disease is carried by the head louse since this parasite is more common on the children in the lines than on the coolies in the fields and as already stated all the cases occurred in the field, none in the lines.

D. H.

LEWTHWAITE (Raymond). **Experimental Tropical Typhus in Laboratory Animals.**—*Bull. Inst. Med. Res. Federated Malay States.* 1930. No. 3. 10 pp. With 3 figs. & 15 charts. [9 refs.]

Sixty-two guineapigs were inoculated with blood from patients as early as possible in the disease (usually the 4th to the 6th day); only three gave a febrile reaction. Attempts to demonstrate an "infection inapparente" (NICOLLE) were not successful. A rat inoculated with blood from a patient died on the 11th day without significant rise of temperature. A guineapig inoculated with emulsified brain of this rat developed fever on the 10th day. On the 14th day it was killed, four others were inoculated therefrom; all reacted. The brain of one of these animals, killed on the 3rd day of fever, showed proliferative lesions similar to those described by WOLBACH and others in the brains of guineapigs infected with true typhus.

Blood drawn from sixty-two patients between the 4th and 8th day of fever was inoculated into eighty-seven rats and a rise of temperature occurred in twenty-three. Of a further 184 rats subinoculated thirty-seven gave a febrile reaction. Perivascular infiltration and typhus "nodules" were found in the brain of one rat out of five examined.

D. H.

KUYER (A.). **Tropical Typhus.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1931. Feb. 1. Vol. 71. No. 2. pp. 182–188. With 6 charts.

Six reports of cases offering the clinical picture of tropical typhus with a pronounced exanthem. In three of them (2 natives, 1 European) the Weil-Felix reaction was positive, in the other three (also 2 natives and 1 European) it remained negative throughout the disease.

W. J. Bais.

WOLFF (J. W.). Enkele waarnemingen bij mijtekoorts en tropical typhus. [**Observations in Tsutsugamushi Fever and Tropical Typhus.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1931. Jan. 1. Vol. 71. No. 1. pp. 35–45. With 4 charts & 2 plates (1 folding). English summary. [Path. Lab., Medan, Sumatra.]

Author's own English summary:—

"A. The occurrence of a positive Weil-Felix reaction (type Kingsbury) during the course of Tsutsugamushi-disease (Schüffner's pseudotyphus, Kedani). A proteus-X-19-agglutination was performed many times in 50 cases of tsutsugamushi-disease. During the course of the disease it became positive 38 times (Kingsbury-strain), usually in the 2nd or 3rd week.

"B. Described is a case of tropical typhus, six months later followed by a typical attack of Tsutsugamushi-disease. At the end of the tropical typhus the Proteus X19 agglutination (Kingsbury-strain) became positive. At the second admission to the hospital the patient's serum showed a negative Weil-Felix-reaction, which gradually became positive during the course of the second disease.

"C. A guinea-pig, intraperitoneally injected with blood of a patient with tropical typhus, showed a typical weight-curve and a marked scrotal reaction on the 8th day. Four other guineapigs (second passage), injected

intraperitoneally resp. with brain- and tunica-vaginalis-emulsions of the first animal, showed during the course of the infection again a loss of weight and a swollen and red scrotum."

W. J. Bais.

VAN STEENIS (P. B.). Een geval van pseudo-typhus (Schüffner) op Java. Met enkele opmerkingen over de differentieele diagnostiek in de groep der febris exanthematica. [**A Case of Pseudotyphus (Schüffner) in Java. The Differential Diagnosis of Exanthematic Fever.**]—*Nederl. Tijdschr. v. Geneesk.* 1931. Jan. 31. 75th Year. 1st Half. No. 5. pp. 495–502. With 2 text figs. [6 refs.] [Military Med. Lab., Weltevreden.]

The case which forms the text of this dissertation had the following characters :—

A primary ulcer in the groin, with regional adenitis. Fever alternating between 39° C. and 40° C. for 18 days and ending almost by crisis. Conjunctivitis with subconjunctival bleeding, bronchitis, palpable spleen and low blood pressure. Stupor, improving towards the end of the fever. Slight and temporary alteration of the reflexes. A blood picture of normal total leucocytes, no eosinophiles, marked shift to the left and moderate toxic change in leucocytes. Weil-Felix reaction positive to a titre of 1 in 1,600 with the anindologenic Kingsbury strain of proteus, negative with the typical proteus X19. Blood culture and agglutination negative for typhoid. No visible rash, but the patient had a very dark skin.

The typhus group of diseases now comprises many members and the author discusses not only the differential characters of these but also the classifications which have been proposed. He does not consider the classification into louse, mite and tick typhus sufficiently well established for adoption. Most important for diagnosis is the Weil-Felix reaction with various strains of proteus ; nor must it be forgotten that co-agglutination with *Bact. typhosum* has frequently been observed in typhus fever. It may be regarded as established that the typical proteus X19 is highly agglutinated in Brill's disease, tropical typhus (shop typhus) and the eruptive fevers of Toulon and Italy, as well as in classical typhus fever, but is not agglutinated in the pseudotyphus of Schüffner, the kedani fever of Japan, Formosa and Malaya, the eruptive fevers of Marseilles and Tunis, and the form of tropical typhus known as scrub typhus. This last type of tropical typhus, however, and pseudotyphus both afford positive agglutination with the Kingsbury strain of proteus. The particular case under discussion is identified as one of pseudotyphus.

W. F. Harvey.

JEWELL (N. P.) & CORMACK (R. P.). **Typhus Fevers, with a Description of the Disease in Kenya.**—*Jl. Trop. Med. & Hyg.* 1930. Oct. 15. Vol. 33. No. 20. pp. 301–305. With 7 charts in text & 2 figs. (1 coloured) on 1 plate. [25 refs.]

The authors give a careful clinical description of a case of this type of fever which is not uncommon in Kenya.

There is a profuse rash which extends to the palms and soles. Usually there is a primary sore, an angry looking mark about the size of a shilling with a small ulcer in the centre, generally ascribed by the patient to an insect bite ; lymphatics draining the area may be tender

and the corresponding glands enlarged. Lice can be definitely excluded as vectors. The authors do not think that the primary sore is due to a tick bite and suggest a mite as the vector.

In cases in which the Weil Felix reaction was tested it was positive with X19 and Warsaw strains.

They compare and contrast the typhus-like fevers which have been described in various parts of the world and believe that it will be found that all these fevers are but variations, due to differing climates and vectors, of the mother disease, typhus.

D. H.

NAGAYO (Mataro), TAMIYA (Takeo), MITAMURA (Tokushiro) & SATO (Kiyoshi). **On the Virus of Tsutsugamushi Disease and its Demonstration by a New Method.**—*Japan. Jl. Experim. Med.* 1930. Aug. 20. Vol. 8. No. 4. pp. 309–318. With 5 figs. on 2 plates. [1 ref.] Also in *Trans. Japan. Path. Soc.* 1930. Vol. 20. pp. 556–566. With 5 figs. on 2 plates. [1 ref.] [Govt. Inst. for Infectious Diseases, Tokyo.]

The authors have described an organism of the *Rickettsia* group as the virus of tsutsugamushi disease [this *Bulletin*, Vol. 23, p. 362] ; this organism was found in the tissues of patients and of inoculated animals. The present paper deals with a new method of demonstrating the organism by means of inoculation of infective material (blood of human cases and ground-up materials from experimental animals) into the anterior chamber of the eye of the rabbit. Characteristic symptoms appear locally after an incubation period of 4 to 8 days.

Material taken from these lesions proved infective for other animals either by intraocular injection or by subcutaneous injection of monkeys. The most highly infective tissue proved to be the layer of endothelial cells of Descemet's membrane and on making smear preparations from this area enormous masses of Rickettsia-like bodies were demonstrated.

Inoculation of typhus material into the rabbit's eye produces somewhat similar changes and Rickettsia can be seen here also, but differing in appearance and distribution from the tsutsugamushi organism.

Recovery from the lesion took place with subsequent immunity to the homologous virus but none to the typhus and vice versa.

The name *Rickettsia orientalis* is proposed for the organism.

D. H.

SINCLAIR (B. A.). **A Possible Case of Tsutsugamushi or Japanese River Fever occurring in the Mandated Territory of New Guinea.**—*Med. Jl. Australia.* 1930. Dec. 6. 17th Year. Vol. 2. No. 23. p. 759.

A case of high continued fever with a macular rash which appeared at the end of the first week of fever. A small slightly-swollen red irritable patch was noted at the commencement of the illness at the back of the right knee ; this developed into a sore with a dark brown scab (" tache noire "). There was no history of a bite and no ticks were found on the patient. The typhoid state was present. The Widal reaction tested on the 18th day was negative to typhoid and paratyphoid. Blood culture negative. The Weil Felix reaction tested on the 30th day was also negative.

D. H.

PIJPER (Adrianus) & DAU (Helen). **The Transmissibility of Tick-Bite Fever Virus to Guinea-Pigs.**—*Brit. Jl. Experim. Path.* 1930. Oct. Vol. 11. No. 5. pp. 287–290. With 1 text fig. [8 refs.]

The authors injected the blood of cases of African tick-bite fever into guineapigs and noted that such injections were invariably followed by a definite, but not marked, rise of temperature which continued for several days. They were able also to pass on infection by passage to other guineapigs, the later injections giving a more pronounced reaction; blood and brain tissue was employed. The temperature reactions in the tick-bite fever guineapigs resemble closely the reaction in guineapigs inoculated with material from cases of Rocky Mountain fever; for this reason it is suggested that tick-bite fever is caused by a living virus of the *Rickettsia* class.

D. H.

CANNAVÒ (L.). Sulla febbre esantematica mediterranea.—*Riforma Med.* 1931. Apr. 6. Vol. 47. No. 14. pp. 517–519. [General Med. Clinic, Univ., Palermo.]

KALA AZAR.

China Medical Journal. 1931. Jan. Vol. 45. No. 1. pp. 1–42. With 2 plates & 1 map. [2 refs.] **Symposium on Kala-Azar.** [8 papers.]

i. **Neostibosan in the Treatment of Kala-Azar. Notes on the Treatment of 87 Cases** [Struthers (E. B.)]. pp. 1–17. With 5 figs. on 2 plates. [2 refs.]

The paper gives an account of eighty-seven cases of kala azar treated with neostibosan. They represented all types of the disease, and in every case diagnosis was made by liver and spleen puncture. The ages varied from three to thirty-six years. The initial adult dose was 0·1 gm. intravenously. Subsequent doses varied from 0·2 to 0·3 gm. according to the weight and condition of the patient. In some cases injections were given daily, and in others every second day. If there were any symptoms which might be attributed to the drug, the interval between the doses was increased and the next dose reduced. For an adult of 100 to 120 lbs. weight a total of 2·6 to 3·0 gm. were given. In children both intravenous and intramuscular injections were given. In no case was there any local reaction from the latter. The initial dose was 0·05 gm. followed by 0·2 gm. on alternate days, till a total of 1·6 to 2 gm. had been given. In India Napier treated a series of adults with daily injections of 0·3 gm. This treatment did not appear to be tolerated so well by the Chinese patients as by the Indian. Though in some cases the treatment was completed in under sixteen days it seemed better as a rule not to push the drug until toxic symptoms appeared, but to give doses well within the tolerance of the patient even though this involved one or two weeks longer treatment. Of the eighty-seven cases thirty-seven have not been traced since treatment was completed; three have died; while forty-seven are still well, twenty-eight of them six or nine months after discharge.

ii. **Kala-Azar treated with Neostibosan. Report of a Series of Cases** [Bethell (S. E.)]. pp. 17–20.

Records are given of the first eleven cases of kala azar treated with neostibosan. They varied in age from four to nineteen years. In two of the cases injections were given on alternate days, and in the others daily. The initial dose varied from 0·1 to 0·2 gm., the maximum dose from 0·15 to 0·3 gm., and the total quantity of drug given from 1·4 to 2·65 gm. according to the age of the patient. Four of the patients have been re-examined two to four months after treatment and were apparently cured. It seems likely that the cases not seen since discharge are also cured. There was no death in the series.

iii. **Table of Treatment of Kala-Azar, from Nanhsuchow, Anhwei** [Turner (William H.), Jr.]. pp. 21–23.

In a series of twenty-seven cases of kala azar treated with neostibosan the author expresses himself as well pleased with the results. In two of the cases followed by death he is of opinion that treatment should have been delayed until further observation had been made. The others made satisfactory progress and two of them were known to be

well five and eight months later. The ages of the patients varied from five to forty-four years, the maximum dose of drug from 0·07 to 0·3 gm. and the total quantity from 0·27 to 3·17 gm.

iv. **Neostibosan in the Treatment of Kala-Azar** [MORGAN (L. S.)]. pp. 24–27.

Having at his hospital continuously from one hundred to one hundred and sixty cases of kala azar under treatment, in order to test the action of neostibosan, the author chose the most advanced ten cases. The result was so entirely satisfactory that it was decided to use this drug exclusively for the treatment of the disease. Since the test several hundred cases have been treated and the author proclaims the change to neostibosan a great improvement. For the first ten cases the average total dose was 6·5 gm., the average number of injections 22·4, and the average duration of treatment 49·9 days.

v. **Kala Azar Work in the Tsingkiangpu General Hospital, Tsingkiangpu, Ku. Preliminary Report** [WOODS (James B.), Sr. & BELL (L. Nelson)]. pp. 27–30.

This report is based on 2,539 cases of kala azar treated during the first eleven months of 1930. Of these 1,097 were in-patients, while the remainder were quartered near the hospital and came daily for their injections. With few exceptions all were treated with neostibosan. For an adult of 120 lbs. weight and in good condition the initial dose was 0·1 gm. This was increased by increments of 0·05 gm. till a maximum of 0·3 gm. was reached for in-patients and 0·25 for out-patients. For children the dosage was worked out on a corresponding basis. The rule has been to give injections on alternate days, up to a total of 3 or 3·25 gm. Of the 2,539 cases 1,914 are given as cured, 473 as still under treatment, 43 as having died, and 109 as having left hospital before treatment was completed.

vi. **Diagnosis of Visceral Leishmaniasis** [YATES (T. M.)]. pp. 31–35.

In discussing the diagnosis of kala azar the author emphasizes the value of liver puncture which has given a positive result in the last hundred cases, namely 95 at a first puncture and 5 at a second. He also finds that Ray's test gives a high percentage of positive findings.

vii. **Kala Azar as a Clinic Disease** [MCFADYEN (A. A.)]. pp. 35–40.

Owing to the lack of hospital accommodation cases of kala azar were treated as out-patients. During the past six years there have been 2,040 of these, of whom 1,934 were treated with tartar emetic and 104 with neostibosan. For diagnosis reliance had to be placed on the clinical signs and the serum globulin reaction. Of the cases treated with tartar emetic the known cures numbered 833, and the known deaths 254. Of the remaining 847 the result is uncertain, but it is estimated that at least half are still living. Of the 104 treated with neostibosan 12 died, several of them as a result of attempts to press the treatment with the object of shortening the course. The advantages and disadvantages of treating cases as out-patients are discussed. It is thought the provision of hostels for the patients would be a solution of the problem of dealing with the large number of cases for which hospital accommodation is not available.

viii. **A Few Facts about the Distribution of Kala Azar in Manchuria** [Taylor (H. W. Y.)]. pp. 40–42. With 1 map in text.

In 1917 leishmania were found by spleen puncture of a patient in Mukden men's Hospital. Since then there has been a constant stream of cases which have risen from four or five to nine or ten a year. Most came from the Liaoyang district, south of Mukden. From the area south of Liaoyang Dr. Phillips of Newchwang sees from ten to fifteen cases a year. It appears certain that kala azar is widely scattered over the south-west part of Southern Manchuria.

C. M. Wenyon.

China Medical Journal. 1931. Feb. Vol. 45. No. 2. pp. 146–147. **Kala-Azar in China. A Brief Addendum to the Symposium on Kala-Azar published in the January Journal.**

Dr. Robertson confirms Dr. Taylor's statements regarding the incidence of kala azar in Manchuria, south of Mukden, while Dr. Sturton mentions cases of possible kala azar which have been reported to him from Kiangshan, on the borders of Chekiang and Kiangsi, a district which is much further south than any known endemic area of the disease.

C. M. W.

Adler (S.) & Theodor (O.). **The Exit of *Leishmania infantum* from the Proboscis of** *Phlebotomus perniciosus*. [Correspondence.]—*Nature*. 1930. Dec. 6. Vol. 126. No. 3188. p. 883.

When the proboscis of a sandfly is inserted into a capillary tube containing a solution of citrate of soda, the mouth parts may exhibit all the movements of piercing with or without ingestion of fluid. Employing this technique (Hertig's method) with fifteen *Phlebotomus perniciosus* which had ingested leishmania five to thirteen days before, it was found that in six instances the fluid in which the proboscis had been inserted contained flagellates, which varied in number from one to hundreds. In all cases, however, the number was small compared with that of the flagellates found in the flies on dissection. The forms recovered in the citrate solution were sluggish or quite motionless, while those seen on dissection in the midgut or oesophagus were very active. From these experiments it is evident that the flagellate forms of leishmania are able to leave the proboscis of *P. perniciosus* during the act of biting, a fact which the authors suggest may explain the relative frequency of Mediterranean kala azar in infants under twelve months of age.

C. M. W.

Nature. 1931. Feb. 28. p. 308. **Transmission of *Leishmania donovani*** [Shortt].

The notice states that a telegram had been received from Lt.-Col. Shortt giving the information that a generalized infection with *Leishmania donovani* occurred in a hamster on which artificially infected *Phlebotomus argentipes* had been fed repeatedly during the course of twelve months. The infection was discovered seventeen months

after the commencement of the experiment. There are no further details but it appears evident that after many failures the Kala Azar Commission in Assam has at last succeeded in transmitting kala azar to the hamster by the bites of sandflies.

C. M. W.

Adler (S.) & Theodor (O.). **A Study of the Sandfly Population in Endemic Foci of Infantile Kala-Azar in Italy.**—*Bull. Entom. Res.* 1931. Mar. Vol. 22. Pt. 1. pp. 105–113. With 2 text figs. & 4 figs. on 2 plates. [9 refs.] [Microbiol. Inst., Hebrew Univ., Jerusalem.]

From the middle of July to the beginning of September, 1929, sandflies were collected in the neighbourhoods of Naples and Catania, the two most important centres of infantile kala azar in Italy. In Naples 9·5 per cent. and in Catania 13·3 per cent. of all cases are in infants under the age of twelve months. In both places the canine disease also exists, but the true relationship of this to the human disease has not been determined. Destruction of street dogs in Catania has had no influence on the incidence of human kala azar. Of the five species of sandfly found, 1,266 *Phlebotomus papatasii*, 270 *P. perniciosus*, 5 *P. sergenti*, 2 *P. vesuvianus* sp. n., and 4 *P. parroti* var. *italicus*, var. n. were dissected but none was found infected with leishmania. By allowing it to feed through a membrane on cultures of the parasites of Italian and Indian kala azar *P. papatasii* was readily infected. Though the Indian strain gave a higher infection rate, the infections produced by the Italian strain were more intense and showed less tendency to die out than those produced by the Indian strain. It was not possible to induce *P. perniciosus* to feed through a membrane, but the variety from Palestine—*P. perniciosus* var. *tobbi*—was fed by Hertig's method through capillary tubes on cultures of two Mediterranean strains which had produced a low infection rate in *P. papatasii*. Both strains produced infections which even when slight ascended to the cardia.

C. M. W.

Blanc (Georges) & Caminopetros (J.). La transmission du kala-azar méditerranéen par une tique. [**Transmission of Mediterranean K.A. by a Tick.**]—*C.R. Acad. Sci.* 1930. Dec. 8. Vol. 191. No. 23. pp. 1162–1164. [1 ref.]

The authors have shown that leishmania will survive a number of days in the larvae and nymphs of *Rhipicephalus sanguineus*. Larvae were allowed to gorge themselves on an experimentally infected spermophile (*Citillus citillus*). They were collected and on the following day 200 were emulsified and injected into a healthy spermophile which was found to be infected about two months later. A similar experiment with nymphs which had fed on a naturally infected dog also gave a positive result. Furthermore larvae taken from an infected spermophile were kept for thirteen days till they had become nymphs, while nymphs from an infected dog were kept for fifteen days till they had become adults. The nymphs and adults were then emulsified and injected into healthy spermophiles. In both cases infection occurred. Though the experiments merely prove that leishmania will survive

for about two weeks in the tick as they are known to do for longer periods in the bed bug, the conclusion is reached that the tick should be regarded as the transmitting agent of Mediterranean kala azar.

C. M. W.

Jemma (Rocco). La leishmaniosi dei bambini. [**Infantile Kala Azar.**] —*Riforma Med.* 1930. Dec. 8. Vol. 46. No. 49. pp. 1939–1943.

This is a general account of infantile kala azar of which the author has had extensive experience at his clinic in Naples. He distinguishes an acute form of the disease of 35 to 40 days' duration, a sub-acute form lasting 5 to 12 months and a chronic form, less frequently seen, which runs a course with periods of remission and exacerbation. As regards treatment he still adheres to the intravenous injection of tartar emetic, which he claims gives as good results as the more recently introduced organic preparations.

C. M. W.

Khaw (O. K.). **Transmission of Kala-Azar to Hamsters** (*Cricetulus griseus*) **by the Oral Route.**—*Proc. Soc. Experim. Biol. & Med.* 1930. Dec. Vol. 28. No. 3. pp. 231–234. [8 refs.] [Peiping Union Med. College, Peking.]

Thirty normal hamsters were each fed by pipette 0·5 cc. of a thick saline emulsion of the ground spleen of a heavily infected hamster. The animals were killed and examined by the smear and culture method at varying intervals after feeding or were allowed to die naturally. A positive culture was first obtained from the spleen of an animal killed seven days after feeding. A number of the animals had been examined with negative results before the seventh day. Excluding these and one that was too decomposed for examination a total of twelve out of fourteen became infected.

C. M. W.

Chodoukine (N. I.), Sophiew (M. S.) & Chewtchenko (F. I.). Sur la possibilité de la contagion par la voie digestive et par contact dans les cas du kala-azar. [**Possibility of Transmission of K.A. by Alimentary Tract or by Contact.**]—*Pensée Méd. d' Usbéquistane et de Turquménistane.* Tashkent. 1930. Aug.-Sept. No. 11–12. pp. 62–65. [In Russian.]

Experiments were conducted and observations made with the view of determining the possibility of transmission of kala azar via the alimentary tract and through contact. In one experiment two " clean " pups were fed on the fresh spleen of a dog infected with kala azar, the infecting material having been placed into gelatine capsules and introduced directly into the oesophagus. In another experiment scrapings of the same spleen were introduced into the conjunctival sacs of two other pups. The animals were sacrificed about 5 months later, material from their spleen and bone marrow was inoculated into NNN medium, and smears were made. The results were in all cases negative. It was further observed that healthy pups kept in close contact with infected dogs during the winter months (when sandflies are absent) remained

uninfected, whereas in summer they readily acquired an infection under similar conditions. From the identity of the canine and human parasites it is inferred that man is likewise incapable of acquiring infection through ingestion of or from contact with infective material.

C. A. Hoare.

CHUNG (Huei-lan) & KUROTCHKIN (T. J.). **The Susceptibility of the Squirrel** (*Sciurotamias davidianus*) **to Kala-Azar.**—*Nat. Med. Jl. China.* 1930. Oct. Vol. 16. No. 5. pp. 616–624. [13 refs.] [Peiping Union Med. College, Peking.]

By inoculating the squirrel (*Sciurotamias davidianus*) intraperitoneally with leishmania from the spleens of infected hamsters or with cultural forms of the organism, the authors have shown that it is susceptible. The infection, though associated with splenomegaly, leucopenia and anaemia, is of a relatively benign nature, the animals showing a marked tendency to spontaneous recovery. Infection is produced more readily with leishmania from the spleen of the hamster than with cultural forms.

C. M. W.

OWEN (D. U.). **A Case of Kala-Azar from West Africa.**—*Ann. Trop. Med. & Parasit.* 1930. Dec. 18. Vol. 24. No. 4. p. 601.

As kala azar is so uncommon in West Africa the author has recorded the following case. A missionary 23 years of age set out from Kano on a six months' trek passing through Zinder, Ingal, Tanout, Tahoua, Agades, Andaras, Iferuane, Dogondouchi, Dosso, Niamey, Say, Gaya, Llo, Yelwa, Jebba and Minna. When he arrived at the last-named place he had fever, for which he was treated unsuccessfully in hospital for five weeks, after which he was sent to England for treatment at the Liverpool School of Tropical Medicine. He was then in a very depressed state, showed a scanty blood infection with *Plasmodium malariae* and leishmania on spleen puncture. He died, in spite of treatment, in March 1928.

C. M. W.

BRAHMACHARI (Upendranath) in collaboration with SEN (Parimal Bikas) & BANERJEA (Radhakrishna). **Studies in Kala-Azar and Chemotherapy of Antimony. Part IV. Further Observations on the Antimony-laden Cells of Spleen after Intravenous Injection of Metallic Antimony in a State of Fine Suspension in Experimental Animals.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1930. Nov. 25. Vol. 24. No. 3. pp. 351–352. With 1 text fig. [College of Science, Univ., & Brahmachari Research Inst., Calcutta.]

The authors report that when finely divided antimony is injected intravenously into healthy mice the particles in the spleen are taken up by cells which are similar to those which they have previously shown take up particles in mice experimentally infected with *Leishmania donovani*. In healthy mice there are more particles remaining outside the cells than in infected mice, a result of the marked increase in number and size of these cells in infected animals.

C. M. W.

BRAHMACHARI (Upendranath) in collaboration with BANERJEA (Radhakrishna). **Studies in Kala-Azar and Chemotherapy of Antimony. Part V. The Treatment of Resistant Cases of Dermal Leishmanoid.** —*Trans. Roy. Soc. Trop. Med. & Hyg.* 1931. Mar. 13. Vol. 24. No. 5. pp. 565–567. [8 refs.] [Brahmachari Research Inst., Calcutta.]

In an attempt to shorten the period of treatment of cases of dermal leishmanoid in six cases intravenous injections of urea stibamine were combined with local inunction of the skin lesions with metallic antimony. The results so far obtained appear to be much more satisfactory than those following intravenous treatment alone.

C. M. W.

CHUNG (H. L.) & REIMANN (Hobart A.). **Antibody Formation in Kala-Azar.**—*Arch. Intern. Med.* 1930. Nov. Vol. 46. No. 5. pp. 782–786. With 2 charts in text. [4 refs.] [Peiping Union Med. College, Peking.]

Nine cases of kala azar, two cases of chronic myelogenous leukaemia and six healthy young adults were given at five-day intervals three doses of triple typhoid vaccine. Agglutination tests were performed with the sera before vaccination, after the second vaccination, and then at approximately ten-day intervals during two months or longer. Though specific agglutinins appeared in all cases they were much weaker in titre and disappeared much sooner in the kala azar and leukaemia cases than in the normal controls. In a patient who developed typical typhoid fever during kala azar, agglutinins did not appear as late as twenty-seven days after the onset. In cases which have recovered from kala azar agglutinins are formed as in normal individuals. It is thought that these results indicate a relationship between the haematopoietic system, which is profoundly affected in these diseases, and the formation of immune bodies.

C. M. W.

LAURINSICH (Alessandro). Ricerche sull'agglutinazione di varie specie di Leishmania. [**Researches on the Agglutination of Leishmania Species.**]—*Pediatria.* 1931. Apr. 1. Vol. 39. No. 7. pp. 345–350. [9 refs.] [Inst. of Clin. Pediatrics, Univ., Naples.]

Experimenting with the sera of rabbits injected with cultural forms of *Leishmania donovani, L. infantum, L. tropica* and *L. brasiliensis*, the author finds that the *L. donovani* serum agglutinated this organism as well as *L. infantum*, while the *L. infantum* serum agglutinated *L. infantum* and *L. donovani*. The sera of the other two parasites were strictly specific. The author concludes that *L. donovani* and *L. infantum* are identical or closely related.

C. M. W.

FRANCHINI (Giuseppe) & PIRAMI (Ester). Ricerche sierologiche sulle leishmaniosi, sui flagellati degli insette e sull'Herpetomonas del gecko (*H. tarentolae*). [**Serological Researches on Leishmaniasis and Insect Flagellates.**]—*Arch. Ital. Sci. Med. Colon.* 1930. Nov. 1. Vol. 11. No. 11. pp. 666–669. [10 refs.] English summary (4 lines). [Lab. of Colonial Path., Bologna.]

By inoculating rabbits with cultures of *Leishmania donovani, L. tropica, L. brasiliensis* and *L. tarentolae*, as also various insect

flagellates (*Herpetomonas muscidarum, H. parva, H. lygoeorum, H. oncopelti*), sera were obtained which it is stated were specific in that they agglutinated only the homologous organisms.

C. M. W.

Zdrodowski (P.) & Woskressenski (B.). Essai du sérodiagnostic et de l'analyse sérologique de la leishmaniose viscérale humaine et canine au moyen de la réaction de la fixation de l'alexine. [**Complement Fixation in the Diagnosis of Human and Canine Leishmaniasis.**]—*Bull. Soc. Path. Exot.* 1930. Dec. 10. Vol. 23. No. 10. pp. 1028–1043. [1 ref.] [Microbiol. Inst., Baku.]

—— in collaboration with Voskressenski (B.). Sur la sérologie comparée du groupe de leishmanies d'origine humaine et canine. [**Relation between Human and Canine Leishmania as shown by Serological Tests.**]—*Ibid.* 1931. Jan. 14. Vol. 24. No. 1. pp. 37–41. [1 ref.] [Inst. of Experim. Med., Leningrad.]

In the first of these papers the authors state that contrary to previous observations they have demonstrated beyond doubt that specific fixation of complement may be obtained in the case of human infections with *Leishmania donovani* and *Leishmania tropica*. The antigen employed was prepared from cultures of the organisms. As regards canine leishmaniasis the results were less defined, and the conclusion was reached that several serological strains of leishmania occurred in dogs.

In the second paper further work, particularly with canine infections, is described. It is clear that in dogs at least three types of leishmania occur—two which correspond with the two human parasites, and one which appears to be distinct in that it gives the reaction with both parasites.

C. M. W.

Balachewa (M. T.). **The Rieckenberg Reaction in Leishmaniasis.**—*Pensée Méd. d'Usbéquistane et de Turquménistane.* Tashkent. 1930. Nov.–Dec. Vol. 5. No. 2–3. pp. 48–53. [9 refs.] [In Russian.]

Rieckenberg's reaction or the adhesion phenomenon was applied to dogs in Tashkent with spontaneous infections of leishmaniasis. Cultures of *Leishmania donovani* and *L. tropica*, both of the human and canine varieties, were employed in the tests. The reaction was positive with the serum of 11 dogs with cutaneous leishmaniasis and with that of 5 with the visceral form when tested against the homologous parasite. The cross-tests with canine sera against human parasites were, however, unsatisfactory; in 6 cases the results were positive, in 10 uncertain. The reaction was positive in 7 dogs suffering from cutaneous leishmaniasis when tested after a year's interval.

C. A. Hoare.

Semenza (Carlo). La leishmaniosi viscerale nel suo aspetto epidemiologico, clinico e terapeutico. [**Kala Azar, Epidemiological, Clinical and Treatment.**]—*Haematologica.* II. Rec. 1930. Vol. 1. No. 5/6. pp. 211–222. [24 refs.]

A general article on kala azar giving no new information.

C. M. W.

Lo Presti-Seminerio (Francesco). Sulla probabile trasmissione della leishmaniosi infantile. [**Transmission of Infantile Kala Azar.**]—*Riforma Med.* 1931. Mar. 16. Vol. 47. No. 11. pp. 433–434.

A discussion of the problem of transmission of infantile kala azar resulting in the conclusion that some blood-sucking insect is involved.

C. M. W.

Beltukow (N.). **A Case of Kala Azar in a Red-Army Soldier.**—*Pensée Méd. d' Usbéquistane et de Turquménistane.* Tashkent. 1930. Nov.-Dec. Vol. 5. No. 2–3. pp. 108–111. [9 refs.] [In Russian.]

The total number of adult cases of kala azar observed in the Central Asiatic provinces of Russia is very small, amounting to not more than about one score. In this paper is recorded a case in a soldier of the Red Army.

C. A. Hoare.

Semenza (C.). Sopra un caso di kala-azar diagnosticato a Milano. [**Case of Kala Azar diagnosed at Milan.**]—*Riforma Med.* 1931. Mar. 23. Vol. 47. No. 12. pp. 447–450. [Princess Jolanda Hosp. School, Italian Red Cross, Milan.]

Description of a case of kala azar in a child twelve years of age. The disease was apparently contracted in Milan though short visits to Genoa and Rome had been made during the six months preceding the commencement of the illness in July 1930.

C. M. W.

Mata Merchán (Mariano) & Mata Merchán (Joaquín). Dos casos de kala-azar infantil en la provincia de Badajoz. [**Two Cases of Infantile Kala Azar in the Province of Badajoz.**]—*Medicina Países Cálidos.* Madrid. 1931. Jan. Vol. 4. No. 1. pp. 44–45.

Description of a case of kala azar in a child six years of age from the Province of Badajos in Spain, and the mention of a second case from the same Province in a child three years of age.

C. M. W.

Perepérez (F.). Dos casos interesantes de kala-azar infantil en la provincia de Alicante. [**Two Cases of K.A. in Alicante.**]—*Medicina Países Cálidos.* Madrid. 1931. Mar. Vol. 4. No. 2. pp. 123–125. With 1 text fig.

A brief description of two cases of infantile kala azar.

C. M. W.

Gasperini (Carlo Gasperino). Sulla coltura dal sangue periferico nel kala-azar. [**Culture of Peripheral Blood in Kala Azar.**]—*Ann. d'Igiene.* 1930. Dec. Vol. 40. No. 12. pp. 910–913.

Blood from five cases of infantile kala azar inoculated into N.N.N. medium gave in all cases after two weeks cultures of *Leishmania donovani*. The value of the culture method in diagnosis is emphasized.

C. M. W.

Luiggi (F. J.). Le Souf, pays de leishmaniose cutanée. [**Dermal Leishmaniasis in the Souf.**]—*Arch. Inst. Pasteur d'Algérie.* 1930. Mar. Vol. 8. No. 1. pp. 85–89. With 1 map in text & 1 plate. [4 refs.] [Pasteur Inst. of Algeria, Algiers.]

The author, having come across about a dozen cases which appeared to be oriental sore in the Souf district of Algeria near the Tunisian

border of the Sahara, was able to confirm the diagnosis by the finding of leishmania in three. The disease is not common in the district, which nevertheless is an endemic focus from which the first cases were recorded by Baqué and Bidault in 1921 and 1923 [see this *Bulletin*, Vol. 18, p. 241 ; Vol. 20, p. 574].

C. M. W.

Photinos (Panagiotis B.). Formes atypiques infiltrées en nappes, de leishmaniose cutanée (bouton d'Orient). [**Atypical Forms of Dermal Leishmaniasis.**]—*Ann. Dermat. et Syphil.* 1930. Nov. 7th Ser. Vol. 1. No. 11. pp. 1184–1187. With 2 figs. [1 ref.]

The author has already called attention to various atypical forms of oriental sore. He now describes and illustrates two cases in which the lesions, instead of being of the usual raised furunculous, ulcerative or nodular type, were in the form of flat infiltrations, resembling papular syphilides or certain types of lupus. In such cases errors in diagnosis are easily made.

C. M. W.

da Cunha (Aristides Marques). Diagnostico da leishmanios etegumentar pelo desvio do complemento e intra-dermo reacção. [**Diagnosis of Dermal Leishmaniasis by Complement Deviation and Intradermal Reaction.**]—*Rev. Med.-Cirurg. do Brasil.* 1931. Feb. Vol. 39. No. 2. pp. 37–39.

As observations were in progress on the possibility of employing an antigen prepared from *Trypanosoma equiperdum* for obtaining fixation of complement as an aid to diagnosis of Chagas' disease it was thought advisable to test the antigen on cases of leishmania infection. Muniz had shown that with this antigen the sera from two such cases of five and seven years' duration had given positive results while sera from two cases with histories of two months had given negative results. The antigen was prepared from washed trypanosomes from the blood of experimentally infected rats. Two cases of leishmaniasis with histories of ten and six months gave a negative result, while four cases, two of which had histories of two and five years, were positive. Two cases of malaria were negative, while of two apparently healthy persons one was negative and the other positive. As the last mentioned case came from a focus of Chagas' disease it is thought possible that it was a case of trypanosomiasis. With the possibility of obtaining a skin reaction antigen was injected intradermally into the six cases and into controls. The controls gave no reaction while all six cases of leishmaniasis gave a reaction of varying intensity. This was evident in 24 to 48 hours and was local, general and focal. The local reaction took the form of a painful erythematous papule, the general reaction was represented by an elevation of temperature, while the focal reaction consisted of congestion around the cutaneous lesions.

C. M. W.

Gupta (B. M. Das). **The Treatment of Oriental Sore with Berberine Acid Sulphate.**—*Indian Med. Gaz.* 1930. Dec. Vol. 65. No. 12. pp. 683–685. With 5 text figs. [2 refs.]

The author reports that during 1928–29 six cases of oriental sore were successfully treated with a 2 per cent. solution of berberine acid

sulphate, two to four injections being required to effect a cure. With a view to discovering if the disease could be cured by one intensive dose a case with four lesions was selected. The lesions, in all of which leishmania were demonstrated, comprised an ulcer about one and a quarter inches in diameter on the wrist and three nodules on other parts of the body. One of the nodules and the tissue round it was infiltrated on all sides by an injection of 3 cc. of Orisol (Messrs. May and Baker's 2 per cent. solution of berberine acid sulphate in ampoules), another nodule with 1 cc., and the two other lesions with 3 cc. From the first of these lesions pieces of tissue were removed before, forty-five hours after, and four days after the infiltration. Sections were cut. Many parasites were present in the piece removed first, considerably less in the second piece and practically none in the third. To destroy the few remaining parasites in this lesion a second infiltration with 2 cc. was given. All four lesions healed very rapidly. The author has seen thirty-three cases of oriental sore, all of them dealt with by infiltration with the drug. A 2 per cent. solution of the acid salt must be used and the hyperaemic area round the sore as well as the sore itself must be infiltrated. If 2 cc. to 3 cc. are injected into several points the majority of sores can be cured by a single injection.

C. M. W.

Lenfeld (Jan). Příspěvek ke klinické diagnostice spontánní leishmaniosy psů. Contribution au diagnostic clinique de leishmaniose canine spontanée. [**Diagnosis of Canine Leishmaniasis.**]—Reprinted from *Věstník I. sjezdu čsl. zvěrolékarů.* [Proceedings of the I. Congress of Czechoslovakian Veterinarians held at Brünn in 1927]. 15 pp. With 7 figs. on 6 plates. [20 refs.] [In Czechoslovakian. French and German summaries.*]

——. [In Czechoslovakian and French.] Mikroskopický nález při akutní spontánní leishmaniose psa. Recherche microscopique de la leishmaniose canine spontanée d'une marche aiguë.—*Klinické Spisy Vysoké Školy Zvěrolékařské Brno, Československo. Publications Cliniques de l'Ecole des Hautes Etudes Vétérinaires Brno, Tchécoslovaquie.* 1929. Vol. 7. No. 4. pp. 169–178. With 7 text figs. [French summary.]

On a journey by ship from Hongkong to Trieste in 1920 three of a number of dogs on board became ill. The symptoms are described in detail. Two of the dogs died, while one recovered in three days. It was possible to perform a post-mortem examination on one of the dogs, a young one purchased in Hongkong. Smears of the various organs were made and tissues were fixed in formalin. The films were eventually stained and sections of the tissues cut. In both smears and sections it is stated that numerous leishmania occurred. It is concluded that not only this dog but the two others suffered from acute leishmaniasis, from which one recovered after three days' illness. A further conclusion is that canine leishmaniasis is endemic in Hongkong.

[Being aware of the fact that kala azar in China has not been recorded south of the Yangtse river, the reviewer requested the author to send him preparations. He very kindly forwarded excellently stained smears of the spleen, bone marrow and heart blood, as also fixed tissues. Sections of the spleen were made but neither in these nor in the smears could the reviewer discover any evidence of leishmania infection.]

C. M. W.

* This abstract was prepared from a typewritten English translation sent by the author to the reviewer privately, as the French and German summaries at end of the printed paper give notes on canine leishmaniasis in general but do not deal with the actual cases under report.

Seshadrinathan (N.). **Report of a Second Case of "Dermal Leishmanoid" from Madras.**—*Indian Med. Gaz.* 1930. Oct. Vol. 65. No. 10. pp. 567–568. With 2 text figs. [Med. College, Madras.]

Description of another case of post-kala-azar dermal leishmaniasis from Madras. The patient had been discharged as cured from kala azar about a year before the cutaneous lesions made their appearance.

C. M. W.

Canaan (T.). Zur Epidemiologie der Orientbeule in Palästina. [**Epidemiology of Oriental Sore in Palestine.**]—*Dermat. Woch.* 1930. Dec. 6. Vol. 91. No. 49. pp. 1779–1781. [10 refs.]

In a previous paper (this *Bullein*, Vol. 27, p. 99) the author stated that since the War oriental sore in Palestine, which had been limited to Jericho, had spread to other centres. In the present paper further evidence of this is produced, and the various factors which may account for it are discussed.

C. M. W.

Joannidès (Nicolas Z.). Neostibosan bei Leishmaniosis. [**Neostibosan in Leishmaniasis.**]—*Dermat. Woch.* 1931. Feb. 21. Vol. 92. No. 8. p. 280. With 1 text fig. [Dr. Nicolas Joannidès' Skin Clinic, Cairo.]

The case of a woman, thirty-four years of age, who had oriental sore in the form of two lesions on the leg. A cure was brought about in twenty-two days by combining local treatment with eight intramuscular injections of neostibosan and twelve injections of iodisan.

C. M. W.

Fox (Howard). **American Leishmaniasis. Report of Cases observed in Brazil.**—*Arch. Dermat. & Syph.* 1931. Mar. Vol. 23. No. 3. pp. 480–501. With 13 text figs. [35 refs.]

A general well-illustrated article based on personal observations made during a trip to Brazil.

C. M. W.

Blanc (Georges) & Valtis (Jean). Le kala-azar sensibilise-t-il le spermophile de Macédoine vis-à-vis de l'infection tuberculeuse expérimentale ?—*C. R. Soc. Biol.* 1931. Jan. 30. Vol. 106. No. 3. pp. 154–155. [1 ref.]

Dostrowsky (A.). The Geographic Distribution of Leishmaniasis of the Skin in Palestine.—*Harefuah.* Jerusalem. 1930. Sept.-Oct. Vol. 4. No. 5. p. 241.

LEPROSY.

PHILIPPINE JOURNAL OF SCIENCE. 1931. Apr. Vol. 44. No. 4. pp. 449–480.—**Report of the Leonard Wood Memorial Conference on Leprosy held in Manila, Philippine Islands, January 9 to 23, 1931** [WADE (H. W.), Chairman].

This remarkable conference was organized and financed by the Leonard Wood Memorial Fund for the Eradication of Leprosy through its Secretary, Mr. Percy Burgess, and was presided over by Dr. H. W. WADE. Twenty-two delegates with great experience of leprosy from every quarter of the world met in Manila and, without wasting time over formal papers, took part in a free and frank discussion of the great problem how to rid the world of leprosy. Remarkable unanimity was arrived at with regard to nearly all points. They recommended that an adequate digest of the yearly leprosy literature throughout the world should be published. A nomenclature for general use was agreed to with definitions of clinical terms and a classification much on the lines of that of E. MUIR was adopted, the lepra reaction should be further studied, the great importance of early diagnosis was emphasized, the procedures necessary for full clinical and bacteriological examinations were laid down. The treatment of leprosy was discussed under the headings of general and special measures, the various derivatives of Hydnocarpus oils, with their methods of preparation, were detailed and the standardization, appraisal and organization of treatment were discussed, together with the question of cure, relative cure and negative cases; the term "arrested" was preferred to "relatively cured." The necessity of a follow-up of discharged patients, the study of contacts and the standardization of records were stressed. Prophylaxis was not specifically dealt with, but the findings of the unpublished Bangkok meeting in December 1930 of the Leprosy Commission of the League of Nations were considered and approval was given to those findings in principle. The importance of further epidemiological studies and the influence of diet were stressed, together with further research on etiology, pathogenesis, biochemistry and pharmacology. It was also decided to form an International Leprosy Association with a scientific journal of its own, and a temporary Council was initiated with Dr. Victor G. HEISER as President.

L. Rogers.

UNION OF SOUTH AFRICA. ANNUAL REPORT OF THE DEPARTMENT OF PUBLIC HEALTH YEAR ENDED 30TH JUNE, 1930. pp. 23–36. With 4 charts. **Leprosy.**

COCHRANE (Robert G.). **Report on Leprosy in the Union of South Africa.**—*Union of South Africa. Ann. Rep. Dept. Public Health Year ended 30th June, 1930.* Annexure "A." pp. 59–65.

The Union report contains elaborate tables and charts illustrating the cases of leprosy in the six leper Institutions of South Africa. These show a great decline in the number of European and mixed coloured patients since 1913 with 94 and 112 remaining, but an equally marked increase in the native lepers due to better arrangements for their collection by motor ambulances. Voluntary admissions are steadily increasing, but most are still advanced cases. One of the medical officers became infected by pricking his finger through a rubber glove, but he is improving. There are estimated to be still from 1,500 to 2,000 undis-

covered native cases at large. Arrangements are being made to examine the close contacts of newly discovered cases. The Robben Island leper institution was to be closed in March 1931. A Leprosy Advisory Committee was held in Pretoria and was attended by Dr. R. G. Cochrane. The present compulsory segregation policy of South Africa was endorsed and clinics were considered to be impracticable on account of the sparsely populated nature of the infected native areas. A report of a tour of Dr. Cochrane is appended in which he concurred in the above policy.

L. R.

Cooke (F. H.). **Short Note on the Leper Settlement, Ho, 1929–30.**—*Gold Coast Rep. on Med. & San. Dept. for Year 1929–1930.* Appendix C. pp. 191–192.

Dixey (M. B. Duncan). **Leprosy Investigation Report.**—*Ibid.* Appendix D. pp. 192–197.

The first of these notes deals with the Ho Leper Settlement, where 499 lepers were well housed at the end of March 1930, with 70 acres of land to cultivate, which will make the settlement more or less self-supporting; weaving, carpentry and shoemaking are carried on. The second note deals with the work of the whole-time leprosy medical officer of the Gold Coast, whose surveys show heavy infection of some areas up to 7 per mille, but with only two local medical officers and one travelling dispensary for over 400,000 people in the Northern Province, only a few can be treated as yet. Leper clinics at Tamale and Zuarungu attract increasing numbers of lepers.

L. R.

Schneider (Otto). Lepraerinnerungen aus Siam und China. [**Leprosy Experience in Siam and China.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1931. Mar. Vol. 35. No. 3. pp. 145–159. With 8 text figs. [5 refs.]

This is a general account of the author's experience without any data of the distribution of the disease in these countries. He lays stress on the importance of early diagnosis and on the infective nature of the nasal discharges, and he states that he has seen many lepers become free from symptoms under long-continued intravenous injections of hydnocarpates, and after trials of other methods he has always returned to the hydnocarpates as the most reliable. In addition he gives chaulmoogrates orally and he records a case which cleared up on such tablets taken for 1½ years in doses of 20 or more daily.

L. R.

Hawaii: Annual Report of the President of the Board of Health of the Territory of Hawaii for Fiscal Year ending June 30, 1930. pp. 352–392.—**Report of Bureau of Leprosy.**

In this report J. T. Wayson deals with the administration of the Leper Bureau in Hawaii and gives numerous tables of data regarding the cases. Among treatments tried experimentally were fatty acids combined with iodine or sulphur, and calcium lactate and codliver oil to which ergosterol was added, but no definite results were obtained with either.

L. R.

LEPROSY REVIEW. 1931. Apr. Vol. 2. No. 2. pp. 39–78. With 7 figs. (1 map) on 4 plates. Quarterly Publication of the British Empire Leprosy Relief Association, 29, Dorset Square, London, N.W.1.

This number contains interesting information on the distribution of leprosy in four important British possessions. B. MOISER records a leprosy survey in Southern Rhodesia of 6,814 natives with 35 cases, 5 per mille, or including 22 cases in the settlement 8·3 per mille. He estimates the total in the colony as six to seven thousand, of whom 2,000 require to be in institutions as infectious under a voluntary system, while the early ones should attend clinics.

The leprosy problem in British Guiana is dealt with by F. G. ROSE; survey showed a heavy infection in an area previously thought to be healthy. He was able to get every infectious case isolated and all early cases treated without any difficulty, so that over 90 per cent. of the known cases in the visited districts are now being treated effectively. During the last 4½ years 166 lepers have been discharged from the hospital settlement, and in only 12·4 per cent. has recurrence of symptoms occurred, most of whom have cleared up again under treatment; for the first time the majority of the hospital patients are voluntary admissions to obtain treatment. A new leprosy ordinance is about to be introduced and this will permit treatment of early uninfectious cases at clinics.

Leprosy in Uganda is reported on by R. G. COCHRANE as the result of a visit last year. The number of lepers is estimated at 20,000, the Eastern Province being one of the worst areas in Africa with 11 per cent. of infections in parts. Financial difficulties greatly handicap the campaign against the disease, but treatment of cases is being carried out at a number of centres, including out-patient clinics. Dr. WIGGINS now has 150 children in a special hospital, from which a first batch of recoveries was discharged in January and new cases admitted in their place, and 120 adults are in another hospital.

Leprosy policy in Basutoland is discussed by P. D. STRACHAN, who is in charge of the compulsory segregation asylum, where the inmates numbered 487 in 1923, but by August 1930 they had risen to 688 as the result of the appointment of inspectors to tour the districts in search of cases. The cost of isolation is very high, but a number of discharges of recovered lepers are now being made and uninfective cripped nerve cases are to be placed on a neighbouring farm. The leprosy rate among the population of 500,000 is believed to be about 2 per cent. Owing to the paucity of medical officers in this mountainous area out-patient clinics are not practicable except at the seven government dispensaries, but it is proposed that early and little infectious cases should be induced to reside near a treatment centre in place of segregation.

Another interesting paper is by D. N. FORMAN on leprosy cases seen at a general dispensary in Allahabad, where 70 were seen in one year and received an average of 50 injections each, with none worse, 30 per cent. slightly, 33 per cent. moderately and 30 per cent. markedly improved, and 4 with the disease arrested. He concludes that these results are gratifying and indicate that general dispensaries have a very important place in the campaign against leprosy.

L. R.

Chatterji (S. N.). **Unsuspected Sources of Leprous Infection.**—*Indian Med. Gaz.* 1931. Mar. Vol. 66. No. 3. pp. 129–132. With 2 plates.

A number of cases occurring in the middle and upper classes in India are tabulated and the probable sources of infection are discussed, with illustrative cases and photos. Among these are contact with leprous servants, especially cooks and maidservants and fruit and other food contaminated by leprous vendors. Infection of nurses, washers of clothes, teachers in schools and other workers coming into contact with cases of leprosy are illustrated by examples, and the conclusion is come to that no one living in a leprous country can be quite sure of escaping contact with an unsuspected case. On the other hand, doctors and nurses working among lepers run little risk if they take ordinary antiseptic precautions.

L. R.

Ali (M.). **Blood-Groups among Lepers.**—*Jl. Egyptian Med. Assoc.* 1931. Feb. Vol. 14. No. 2. pp. 119–122. [5 refs.] [Public Health Labs., Cairo.]

Published investigations have given variable results, but 100 cases examined by the author showed A 44 per cent., B 21, O 18 and AB 17 per cent. On comparing these figures with those of normal groups it was found that group O is less predisposed and group A more predisposed to leprous infection. Paldrock on the other hand in Estonia found the O and B groups more predisposed to the disease, and other previous data are quoted giving still different results. No definite conclusion is therefore possible.

L. R.

Markianos (J.). Recherche du bacille de Hansen par le procédé de la goutte épaisse. [**Search for Lepra Bacilli in a Thick Drop.**]—*Bull. Soc. Path. Exot.* 1931. Mar. 11. Vol. 24. No. 3. pp. 172–173.

Lepra bacilli are too rare in the blood for its examination to be of diagnostic value, for they are usually only found there during an acute exacerbation. Examination of blood obtained from leprous lesions is, however, of diagnostic value, and the thick drop method is the best for this purpose. It may be carried out as in malaria, but after dehaemoglobinization by one-third alcohol, the slide is fixed in absolute alcohol for several minutes and then the last drops which remain are heated. Good fixation is thus obtained before staining with the Ziehl method as usual. In 30 nodular cases positive results were obtained and negative results in pure nerve cases.

L. R.

Sabrazès (J.). A propos du diagnostic bactériologique des diverses modalités de lèpre. [**Bacteriological Diagnosis of Leprosy.**]—*Gaz. hebd. Sci. Méd. de Bordeaux.* 1931. Feb. 15. Vol. 52. No. 7. pp. 97–99.

This author agrees that in pure nerve cases lepra bacilli are rarely found in the nose, and he regards making sections for the bacilli of a

small nerve removed from an anaesthetic area as the best diagnostic procedure in this form ; nasal examinations are reliable in nodular cases. When there is nodular thickening of nerves they may be punctured with the needle of a syringe to enable the bacilli to be looked for.

L. R.

Girard (G.) & Hérivaux (A.). La recherche du bacille de Hansen au niveau de la muqueuse nasale. [**Examination of the Nasal Mucosa for Leprosy Bacilli.**]—*Bull. Soc. Path. Exot.* 1931. Jan. 14. Vol. 24. No. 1. pp. 68–71. [Pasteur Inst., Antananarivo & Leprosarium, Manankavaly.]

The authors' researches in Madagascar showed that for efficiency the examination of the nose of lepers for the bacilli should be made by producing an abrasion of the nasal mucous membrane with a curette in nerve cases, although the mucus alone is sufficient in nodular and mixed cases. In those with infiltrated lesions of the face the lepra bacillus is to be found in the nose in 100 per cent., in mixed cases in 71 and in nerve cases in 14 per cent.

L. R.

Pardo-Castello (V.) & Caballero (G. M.). **Lazarine Leprosy : a Peculiar Monosymptomatic Form of Leprosy.**—*Arch. Dermat. & Syph.* 1931. Jan. Vol. 23. No. 1. pp. 1–10. With 8 text figs. [7 refs.]

By this term is meant a form of leprosy characterized by bullous formations followed by eschars and deep mutilating ulcers, often very extensive, such as 4 or 5 inches in diameter, of which the authors have seen twenty-three cases. They commence suddenly with a large blister followed by rapid sloughing extending even to the tendons and bones and taking many months to heal. They most frequently affect one of the extremities and discharge numerous acid-fast bacilli. Four of the patients died of septicaemia and in two amputation of an arm was necessary to save life. Removal of sloughs and packs or irrigation with chlorinated soda saved many cases from amputation. This condition is an early manifestation of the disease and may occur in the absence of other symptoms. A number of good illustrations are given.

L. R.

Wildish (G. H.) & Stoute (D. G.). **The Combined Treatment of Leprosy.**—*Jl. Med. Assoc. South Africa.* 1931. Jan. 10. Vol. 5. No. 1. p. 21.

By this term the authors mean tartar emetic intravenously alternating with potassium iodide orally, which they used in four cases with beneficial results. Potassium iodide was given in 10-grain doses three times a day up to four days, and stopped as soon as any reaction appeared, as it did in three of the cases after three days. Tartar emetic was then injected twice a week in doses increasing from $\frac{1}{4}$ to 1 grain up to ten injections. Subsequently 150 cases were treated in the course of twelve months. No ill effects were seen, and skin ulcers were especially benefited.

L. R.

Dimitry (Theodore J.). **The Treatment of the Nasal Passages and the Eyes with Chaulmoogra Oil in Leprosy.**—*Amer. Jl. Trop. Med.* 1931. Jan. Vol. 11. No. 1. pp. 65–69. [6 refs.]

The author states that for some years he has administered chaulmoogra oil by atomization to the nasal cavities with good results, and as eye involvement only occurs after infection of the nasal cavities such treatment of the lesions and infectivity of the nose is of benefit to any eye lesions. He uses the ethyl esters in the same way. He also applies the pure oil to the conjunctiva if the cornea is anaesthetic, or diluted with olive oil 25, 50, or 75 per cent., and with incorporated benzocaine.

L. R.

Leger (Marcel). Association au chaulmoogra de divers autres médicaments pour le traitement de la lèpre. La trypaflavine. [**Treatment of Leprosy by Chaulmoogra associated with other Remedies.**] —*Bull. Soc. Path. Exot.* 1930. Dec. 10. Vol. 23. No. 10. pp. 1009–1010.

The author advocates the use of chaulmoogra together with other medicines, for which purpose he uses a 2 per cent. solution of trypaflavine intravenously in doses of 5 cc. every three days.

L. R.

Paldrock (A.). Meine spezifische Leprabehandlungsmethode. [**My Specific Treatment of Leprosy.**]—*Dermat. Woch.* 1931. Feb. 21. Vol. 92. No. 8. pp. 273–277. [24 refs.]

—— Zur CO_2-Schnee- und Alepolbehandlung der Lepra. [**Treatment by CO_2-Snow and Alepol.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1931. May. Vol. 35. No. 5. pp. 298–302.

In the first of these papers the author reiterates once more his claim that his CO_2 snow and solganol method is a " specific " treatment, and he records that one of his patients has now remained clinically and microscopically healed for five years. In the second paper he states [contrary to the general opinion of British leprologists] that he has not seen any good effects in leprosy from the use of alepol (sodium hydnocarpate).

L. R.

Delanoë (E.). Traitement mixte de la lèpre par l'injection intraveineuse de novarsénobenzol et par les injections intramusculaires de vaccin B.C.G. La parfaite tolérance de cette méthode de traitement. La rétrocession rapide des phénomènes morbides. [**Treatment of Leprosy by Intravenous Injection of Novarsenobenzol and Intramuscular Injection of B.C.G.**]—*Bull. Soc. Path. Exot.* 1930. Dec. 10. Vol. 23. No. 10. pp. 1005–1009. [1 ref.]

The author records two cases of leprosy treated by intravenous injections of novarsenobenzol and B.C.G. vaccine intramuscularly into the buttock without any abscess formation and with rapid improvement in the symptoms.

L. R.

Roy (Ashutosh). **Intravenous Sodium Bicarbonate in Cases of Nerve Pain in Leprosy.**—*Indian Med. Gaz.* 1931. Apr. Vol. 66. No. 4. pp. 195–196.

The author records two cases of severe and intractable pain in nerve leprosy unalleviated by various other drugs, but which yielded to two intravenous injections of 150 and 200 cc. respectively of ½ per cent. sodium bicarbonate in normal saline at five-day intervals.

L. R.

Paras (Ernesto M.). **Blood Plasma Lipoids in Leprosy.**—*Jl. Philippine Islands Med. Assoc.* 1931. Jan. Vol. 11. No. 1. pp. 1–9. With 3 text figs. [15 refs.] [Chem. Section, Culion Leper Colony, Philippine Is.]

This is an interesting investigation which is well summarized in the following conclusions of the author :—

" The blood plasma of 93 lepers, grouped in representative classes, was examined for total lipoids, cholesterol, phospholipoids, and total fatty acids. Twenty-one healthy individuals as normal controls were also examined for the above-mentioned constituents. Individuals were selected who differ in their mode of living, particularly as to diet. The ratios between these lipoid fractions were also determined. The figures obtained for the staff members compare favorably with those given by Bloor for Americans, but those from the laboring class are comparatively much lower.

" The investigation here reported presents evidence that it is the state of nutrition rather than the climatic factor that is responsible for the variation in blood lipoids that may be found in healthy individuals.

" Using the data obtained for normal controls as the basis of comparison, a summary of the data obtained for lepers brings out the following facts :

" 1. In the untreated cases of leprosy, the values for total lipoids and total fatty acids are markedly low. The cholesterol value is only slightly reduced.

" 2. In the group of cases treated with chaulmoogra oil derivatives, but still positive, the total fatty acid values are distinctly low, but the total lipoid values are only slightly lower than are those of the normal controls. The cholesterol value is somewhat higher than that in the untreated and the negative groups.

" 3. In the treated cases that have become negative, the values for total lipoids, total fatty acids, and cholesterol are all within the normal limits.

" The characteristic low values for total lipoids and total fatty acids in the untreated and the treated positive lepers, while normal in the negative cases, suggest at least two possibilities ; one possibility is that the leprosy bacilli attempt to protect themselves from the destructive action of the defence mechanism of the body by utilizing part of the plasma lipoids, and the other is the destructive effects of the chaulmoogra fatty acid treatment upon the lipoid coating of the lepra bacilli. Further study along these lines is suggested."

L. R.

Wooley (Jerald G.) with the Technical Assistance of Ross (Hilary). **Phosphorus, Total Calcium, and Diffusible Calcium Content of the Blood Sera of Lepers and their Relation to Bone Changes.**—*Public Health Rep.* 1931. Mar. 20. Vol. 46. No. 12. pp. 641–658. [10 refs.]

The common atrophy and absorption of bones in leprosy has led to a number of investigations on the phosphorus and calcium content of

the blood in lepers with somewhat variable results. The present investigation was undertaken to ascertain the phosphorus, total calcium and diffusible calcium in the serum of 53 lepers of various types and stages, and tables of the detailed analyses are recorded. The sera of 47 lepers showed calcium and inorganic phosphorus within the normal limits, but estimations of diffusible percentage of calcium and calcium phosphorus, and the determination of the diffusible calcium-phosphorus balance ratios, revealed that the diffusible calcium and the percentage of total calcium that was diffusible were, on the average, considerably lower in the lepers than in 15 normal young men. X-ray examinations showed atrophy of the bones of the hands and feet in 41 of the 47 lepers examined.

L. R.

i. DE SOUZA-ARAUJO (H. C.). **Experimental Leprosy.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1931. Apr. 25. Vol. 24. No. 6. pp. 577–598. With 5 plates (3 coloured). [18 refs.]

ii. ——. **Treatment of Leprosy.**—*Ibid.* pp. 599–602. [1 ref.] [Oswaldo Cruz Inst., Rio de Janeiro.]

i. In this well-illustrated paper the author gives a summary of his attempts since 1928 to infect animals with leprosy on the lines of REENSTIERNA by inoculating fresh emulsions of lepromata swarming with lepra bacilli into white mice, white rats, guineapigs and monkeys, as already recorded in previous papers. Important controls were made by inoculating other animals with leprous material previously sterilized by immersion in absolute alcohol, 10 per cent. formol or treated by heat, with the interesting result that after treatment by the two last methods nodules were produced far from the point of inoculation containing lepra bacilli, as did the liver and kidneys, and these dead organisms could not be differentiated from those found after injecting fresh unsterilized lepra bacilli. He therefore raises the question whether the apparent infections of animals with the fresh material were nothing more than the mechanical distribution in the animals of the injected bacilli without any multiplication indicative of a true infection.

ii. The author gives his experience of the treatment of leprosy since the year 1915; it is local and general as well as tonic. For the details the original must be seen.

L. R.

MARCHOUX (E.), MARKIANOS (J.) & CHORINE (V.). Le bacille de la lèpre a-t-il été obtenu en cultures artificielles ? [**Has the Leprosy Bacillus been cultivated ?**]—*C.R. Soc. Biol.* 1931. May 1. Vol. 106. No. 13. pp. 1191–1193. [2 refs.]

The authors point out that such claims as the recent one of SHIGA (see this *Bulletin*, Vol. 27, p. 339) to have cultivated the lepra bacillus lack proof that the organisms present in the cultures are really living, and not dead bacilli carried over from one tube to another. This point can only be tested in the case of the closely allied rat leprosy acid-fast bacillus, as rats are readily infected with it. They have repeated SHIGA'S culture methods with this organism, and were able to prove

that the bacilli in the apparent cultures were all dead within two months and were carried over in subcultures without growth, so no true cultures were obtained.

L. R.

VAUDREMER (A.), SÉZARY (A.) & BRUN (C.). Essais de cultures du bacille de Hansen du sang et des lépromes. [**Attempts to cultivate the Lepra Bacillus from Blood and from Lepromas.**]—*C.R. Soc. Biol.* 1931. May 1. Vol. 106. No. 13. pp. 1225–1228. [1 ref.]

The authors attempted to make cultures from the blood of lepers during acute exacerbations of the disease, and in a liquid medium of *Aspergillus fumigatus* they obtained blue staining mycelium, which they think may be a stage of the leprosy bacillus, although they do not feel certain about it.

L. R.

MARKIANOS (J.). Lèpre et virus filtrable. [**A Filterable Virus in Leprosy.**]—*Ann. Inst. Pasteur.* 1931. Mar. Vol. 46. No. 3. pp. 291–295. [11 refs.]

The author recalls that in 1910 FONTÈS in Brazil showed that animals could be infected with the products of filtering tubercle bacilli through a Berkefeld bougie owing to the granules in the organisms passing through. In the present paper the results of similar experiments with material from rat leprosy containing Stephansky's bacillus are recorded with infection of healthy rats by injecting them with the filtrates. Young rats were most susceptible, for the acid-fast bacilli were found in their glands 20 days after inoculation, against two months in the case of adult rats. Thus the granules of the leprosy group of organisms are capable of producing infection and the greater susceptibility of young rats finds its parallel in that of children and adolescents to leprosy.

L. R.

SÉZARY (A.) & ROUDINESCO. Laryngite lépreuse. Dyspnée grave améliorée immédiatement par la médication "de choc." [**Dyspnoea of Leprous Laryngitis Promptly relieved by "Shock" Treatment.**]—*Bull. Soc. Française Dermat. et Syph.* 1931. Feb. No. 2. pp. 230-232. [1 ref.]

A brief report of a case of laryngeal leprosy with urgent dyspnoea, treated with temporary relief by intravenous injections of a combination of the patient's own blood and a suspension of Dausse's colloidal chaulmoogra.

L. R.

DE SOUZA-ARAUJO (H. C.). Le traitement moderne de la lèpre dans les principaux centres de léprologie. [**Modern Treatment of Leprosy.**]—*Bruxelles-Méd.* 1931. Mar. 29. Vol. 11. No. 22. pp. 630-636. [2 refs.]

COCHRANE (R. G.). **A Review of the Present Methods of Treatment in Leprosy.**—*Brit. Jl. Dermat. & Syph.* 1930. Vol. 42. pp. 125-134. [6 refs.]

These experienced workers give brief summaries of the modern methods of treatment of leprosy for the help of those with less experience.

L. R.

Borrel (A.) & Larrousse (F.). Localisation lépreuse dans le foie du rat par le cysticerque du *Taenia crassicola.* [**Bacilli of Rat Leprosy and Cysticercus fasciolaris.**]—*C.R. Soc. Biol.* 1931. Jan. 8. Vol. 105. No. 36. pp. 822–823. With 1 text fig.

In this brief paper the authors record and illustrate the localization of the bacilli of rat leprosy in the capsule around a cysticercus of *Taenia crassicollis* in the liver of a rat. They conclude that this animal parasite may convey rat lepra bacilli to the liver from the intestinal canal.

L. R.

Ambrogio (A.). Ricerche biologiche in alcuni casi di lebbra. (Nota preventiva.)—*Giorn. Ital. di Dermat. e Sifil.* 1930. Aug. Vol. 71. Year 65. No. 4. pp. 1292–1301.

Antunes (Alair). A lepra no Estado do Rio de Janeiro.—*Folha Med.* 1931. Apr. 15. Vol. 12. No. 11. pp. 129–131.

Denney (O. E.). Leprosy. Some Nursing and Public Health Aspects.—Reprinted from *The Trained Nurse & Hosp. Rev.* 1930. July. Vol. 85. No. 2. 4 pp. With 5 text figs.

Dhur-Roy (Jyoti) & Rakshit (A.). A Note on the Use of Ultra-violet Rays in the Treatment of Leprosy.—*Indian Med. Gaz.* 1930. Apr. Vol. 65. No. 4. pp. 209–210. [Chittaranjan Seva Sadan, Calcutta.]

Duguid (C.). Leprosy.—*Med. Jl. Australia.* 1931. Feb. 21. 18th Year. Vol. 1. No. 8. p. 233.

Kusnetzow (W. N.). Die Konstitution der Leprakranken.—*Arch. f. Schiffs- u. Trop.-Hyg.* 1930. May. Vol. 34. No. 5. pp. 231–236. [21 refs.]

Louste, Lévy-Franckel & Gadaud. Un cas de lèpre érythromaculeuse et atrophique d'origine marocaine.—*Bull. Soc. Française Dermat. et Syph.* 1931. Jan. No. 1. pp. 27–29. [2 refs.]

Milian & Degos (R.). Lèpre aiguë.—*Bull. Soc. Française Dermat. et Syph.* 1931. Feb. No. 2. pp. 184–185.

Nicolas (J.), Massia (G.) & Weigert (H.). Deux cas de lèpre.—*Bull. Soc. Française Dermat. et Syph.* 1931. Jan. No. 1. pp. 123–125. [R.L. 25–27.]

Paldrock (A.). Zur Frage der Leprabehandlung.—*Immunität. Allergie u. Infektionskr.* Munich. 1929–30. Vol. 2. No. 6. pp. 173–178. [17 refs.]

Rajewsky (A. S.). Begleitinfektion bei Lepra.—*Arch. f. Schiffs- u. Trop.-Hyg.* 1930. June. Vol. 34. No. 6. pp. 303–309. [7 refs.]

Rogers (Leonard). When will Australia adopt Modern Prophylactic Measures against Leprosy ?—*Med. Jl. Australia.* 1930. Oct. 18. 17th Year. Vol. 2. No. 16. pp. 525–527.

Tisseuil (J.). Sur un cas de lèpre nodulaire à évolution tuberculoïde secondaire.—*Bull. Soc. Path. Exot.* 1931. Jan. 14. Vol. 24. No. 1. pp. 17–21. [Gaston Bourret Inst., Nouméa.]

SPRUE.

i. Baumgartner (E. A.) & Jewett (C. Harvey). **Tropical Sprue. Experience with Thirty-Six Cases.**—*Arch. Intern. Med.* 1930. Oct. Vol. 46. No. 4. pp. 597–604. [14 refs.]

ii. ——. **The Blood Picture in Tropical Sprue.**—*Folia Haematologica.* 1930. Vol. 43. No. 1/2. pp. 192–205. With 4 figs. [29 refs.]

i. A study of sprue is presented from 36 patients who have entered the Clinic at Clifton Springs during the last 5½ years. Most were missionaries from the Orient, sixteen from India, five from Korea, five from the Philippines, two from Porto Rico, and one each from Costa Rica and Persia. Twenty-four were women and twelve were men. The oldest was 71, and 16 were between 40 and 60; none was under 32. One patient developed symptoms of sprue with tetany three years after return from the Philippines, five gave a history of previous amoebic dysentery and five of malaria contracted during their stay in the tropics. The early symptom was usually diarrhoea. Several complained of a severe burning sensation in the mouth and all of marked abdominal distension with much gas, and two of severe burning of the stomach. Four patients gave positive Trousseau's and Chvostek's signs or tetany spasms.

The faeces were almost always characteristic of sprue during the acute process. In twenty-three the authors were able to grow a Monilia which corresponded with *M. psilosis*. In nine others an atypical yeast organism appeared. In twelve cases a more or less severe secondary anaemia was present; in sixteen the blood picture was that of pernicious anaemia; in eight the blood was normal. Blood calcium estimations were carried out in thirty patients and low values were found in eleven. Gastric fractional test meals showed achlorhydria in seven cases. X-ray studies of the gastro-intestinal tract in twenty-nine cases showed dilated atonic gas-filled colons in thirteen. Another feature was the apparent elongation of the colon which appeared to fill the abdomen almost completely. In 10 of the 36 patients the disease appeared to have been arrested. Five others had mild symptoms only and nineteen were severely ill. One patient died one week after admission, whilst a second died after leaving hospital.

In the entire group only two patients failed to respond definitely to treatment, mainly by a diet high in protein but low in fat and carbohydrates. In the authors' experience liver has been as efficacious in the control of the anaemia in sprue as in pernicious anaemia. In one case with low blood calcium, Collip's parathyroid extract was given, and in two others grain 1/10 of the dry extract and calcium lactate 10 grains three times daily. In these patients the blood calcium quickly became normal, and the tetanic reactions disappeared. In the fatal case no apparent effect was produced, as the blood calcium at autopsy was 5·6 mgm. per 100 cc. Another did not respond to this or to intravenous injections of calcium chloride. Patients with achlorhydria as well as those with pernicious anaemia were given dilute hydrochloric acid.

ii. This appears to refer to the same series. Sixteen of the 36 presented a blood picture resembling that of pernicious anaemia. The anaemia was of the megalocytic type, associated with leucopenia and a relative lymphocytosis. The Arneth index showed little if any deviation from the normal.

P. H. Manson-Bahr.

Bassler (Anthony) & Lutz (J. Raymond). **Sprue : Some Points on Etiology, Diagnosis, and Especially Treatment.**—*Jl. Amer. Med. Assoc.* 1930. Dec. 27. Vol. 95. No. 26. pp. 1961–1964. [11 refs.]

An account of ten cases of sprue treated in New York. Four methods are described : (1) High-liver diet (with or without excess of vitamins). (2) Transduodenal lavage. (3) Correction of intestinal infection. (4) Residence for a time in a colder climate. Blood transfusion, injection of iron preparations and the types of diet formerly in use did not produce good results in their hands.

The usual diet given was liver cooked in any form and taken at least twice daily, from 4 to 8 ozs. cooked weight, liver sausage, blood sausage and the marrow from grilled or roasted long bones that had been split. In addition 120 gm. (4 oz.) of cooked beef or mutton and no less than 300 gm. (10 oz.) cooked weight of the following vegetables : lettuce, cucumber, spinach, asparagus, rhubarb, endive, marrow and a whole host of other delicacies, including dandelions. When practicable additions were made to the vitamin contents as follows : cod-liver oil in doses of 4–10 cc. for vitamins A and B ; orange, pineapple and fruit juices for A, B and C ; yeast, peas and lentils for B ; tomatoes, lemon juice, oysters, apples and bananas for C ; and lettuce, milk and fats for E.

Transduodenal lavages with hypertonic saline solutions of 9 gm. each of sodium sulphate and sodium chloride in 1,000 cc. at 104° F. were used before bedtime to clear out the fermenting food residue of the day's meals. The quantity introduced was rarely over 500 cc. As improvement took place, these were employed less frequently and the quantity reduced. It was impossible to estimate the benefits due to the transduodenal lavage ; apparently the digestive symptoms are controlled more quickly with than without them. There was one fatal case, advanced at the time of admission.

In the discussion following the paper there is little to remark save the declaration of de Rivas that he had seen a fatal case of gastro-colostomy, performed in mistake for a gastro-enterostomy, which afforded an exact clinical *simulacrum* of sprue.

[There is nothing in this paper which points to the elucidation of the etiology of sprue. On the other hand objections may be taken to the exaggerated generalization on such a meagre series of cases.]

P. H. M-B.

Tyner (James D.). **Tropical Sprue : its Differentiation from Pernicious Anemia by the Arneth Count.**—*Amer. Jl. Trop. Med.* 1930. Nov. Vol. 10. No. 6. pp. 435–439. [5 refs.] [Sanitarium & Clinic, Clifton Springs, N.Y.]

The Arneth Index for a control group of 10 normal adults was 61·1. The usual normal is said to be 60. The average index of ten pernicious anaemia cases was 32·45 ; four of these patients had been receiving liver therapy for several weeks and gave an average of 33·5. The average index of seventeen sprue cases was 62·1, while that of the three remaining to complete the series of twenty worked out at 32·8. The large majority of sprue cases therefore present an index somewhere about the normal. Since 85 per cent. of sprue cases have an index close to the normal, 61·1, and pernicious anaemia averages 32·45, it is suggested that the method should be used in the differential diagnosis of these two diseases.

P. H. M-B.

WINTROBE (M. M.). **The Hemoglobin Content, Volume and Thickness of the Red Blood Corpuscle in Pernicious Anemia and Sprue, and the Changes associated with Liver Therapy.**—*Amer. Jl. Med. Sci.* 1931. Feb. Vol. 181. No. 2. pp. 217–239. With 4 charts in text. [18 refs.] [Med. Dept., Tulane Univ. of Louisiana, & Charity Hosp., New Orleans.]

A series of one hundred blood examinations have been carried out in sixteen cases of pernicious anaemia, and eight cases of sprue, of all degrees of severity and at varying intervals during remissions induced by liver therapy. The customary blood examinations were made and in thirty-two instances cell diameter and thickness were measured as well.

The mean volume and the haemoglobin content of the red blood corpuscles in pernicious anaemia and sprue are significantly greater than normal during the stage of relapse of these diseases, and both these are correlated with the red cell count, high values for these constants being found when the cell count is low and lower values as the cell count rises. The correlation between mean corpuscular volume and the cell count is less marked in the severe stages of anaemia because of the presence of large numbers of small and distorted cells in the blood stream at such a time.

[The paper is illustrated by four elaborate plotted charts and summaries stated in seven tables. It is so replete with mathematical formulae and statistical details that the research worker is advised to consult it in the original.]

P. H. M-B.

BAUMGARTNER (E. A.) & SMITH (G. D.). **Blood Picture before and after the Development of a Severe Anemia in a Case of Sprue. Red Cell Diameters, Arneth Index, Platelets.**—*Clifton Med. Bull.* 1930. Oct. Vol. 16. No. 4. pp. 189–194. [10 refs.]

The case in which these observations were made has been watched since 1923. At first, symptoms were mainly neurasthenic, but gradually the signs of sprue became established. A moderate anaemia with normal sized cells was at first noted and gradually, as the symptoms of sprue became more manifest, the red cells became larger (8·5 μ). The anaemia improved and the erythrocytes decreased in size to normal but this decrease lagged behind the improvement in the number of erythrocytes. Arneth counts showed an index more like the normal than that of pernicious anaemia.

P. H. M-B.

LE GAC (P. L.). Sur un cas de sprue observé chez un Européen à la Côte d'Ivoire. [**Case of Sprue in European (from Tonking).**]—*Bull. Soc. Path. Exot.* 1930. July 9. Vol. 23. No. 7. pp. 709–710.

A " sous-officer " was admitted to the Hospital at Abidjan. The symptoms were those of sprue associated with an anaemia of severe degree (40 per cent. haemoglobin and 2,356,000 red blood corpuscles per cmm.), and yeasts were readily isolated from the faeces. As the patient was attacked by the disease whilst still on board ship on his voyage out to the Colony, the infection was not contracted in West Africa, but in Tonking where he had previously served for four years. He had been two years in France, during which time the disease must have remained latent.

[The title of this paper tends to mislead as the disease did not originate in West Africa.]

P. H. M-B.

GOVER (W.). **Sprue treated with Intravenous Injections of Calcium Chloride.** [Memoranda.].—*Brit. Med. Jl.* 1930. July 12. p. 61.

Sprue is a very rare disease in Costa Rica, hence the interest of the case reported. A coffee planter, aged 69, was first seen in August 1928 with symptoms of sprue. On the customary treatment with calcium lactate, Batavia powder, strict dietary, liver, strawberries and subcutaneous injections of iron and arsenic he lost 7 lb. In July 1929 intravenous calcium treatment (3 cc. of a 2 per cent. solution in a series of twenty-five injections) was started in conjunction with parathyroid extract, but the parathyroid was discontinued later since it did not seem to have any effect. For a few minutes after the injection, a sense of constriction in the throat was noted, but there was otherwise no inconvenience. On this treatment the general condition of the patient greatly improved and he put on 22 lbs.

P. H. M-B.

HARSTON (Montague). **A Note on the Treatment of Sprue by Ultra-violet Irradiation. (Hypopiesis a Contra-Indication.)**—*Brit. Jl. Actinotherapy.* 1930. Dec. Vol. 5. No. 9. p. 189.

In ordering this treatment specific details should be given, such as the appropriate wave-length and the character of the apparatus, the time of exposure, etc. Sprue is associated with low blood pressure, so that it is necessary to measure this before commencing treatment. In cases where patients can stand irradiation without depressing effects on the blood circulation, there is no apparatus better than the " Nine Arc Tungsten Bath " in conjunction with SCOTT's treatment. The treatment advocated is Tungsten arc baths (wave-length 1,800–2,200 A.U.) bi-weekly at three-day intervals, five minutes duration each bath, for twelve treatments. After the course, a month's interval should be given and irradiation resumed if necessary. If it is resumed, the duration of the first bath should not be more than two minutes.

P. H. M-B.

MENDELSON (Ralph W.) & BEAM (M. P.). **Non-Tropical Sprue.**—*Southwestern Med.* 1930. Sept. Vol. 14. No. 9. pp. 430–432. With 2 text figs.

So called non-tropical sprue is being more frequently reported in American medical journals. The present case was that of a lady of 50 years of age born in Germany who had lived in New York for 31 years. She suffered from purulent bronchitis accompanied by frothy diarrhoea. She did not suffer from sore mouth nor was anaemia present. A rapid improvement took place on anti-sprue treatment with calcium lactate and parathyroid. [It is by no means clear upon what grounds this case is classified as non-tropical sprue.]

P. H. M-B.

CRAWFORD (Harold) & GUTTERIDGE (Noel M.). **Sprue and Amoebic Dysentery.**—*Med. Jl. Australia.* 1930. Dec. 20. 17th Year. Vol. 2. No. 25. p. 823.

A patient, aged fifty-six, had suffered from acute dysentery in China, two years before the advent of sprue with continuous diarrhoea, and sore mouth and tongue. The stools, though strongly suggestive of sprue, contained cysts of *Entamoeba histolytica.* There was much anaemia

and the red blood cells showed anisocytosis with slight macrocytosis. The administration of emetine bismuth iodide in pill form (grains 3) was followed by very severe diarrhoea and vomiting. The general condition did not improve and the anaemia became more profound, so that two blood transfusions had to be performed. After the second of these improvement set in. The diet was carefully regulated. When seen last, in August 1930, he weighed 12 stone and the bowels were regular.

The cure is ascribed to the emetine bismuth iodide treatment, followed by blood transfusion.*

P. H. M-B.

STARR (Paul) & GARDNER (Lois). **A Biochemical Study of Two Patients with a Condition simulating Sprue.**—*Amer. Jl. Trop. Med.* 1930. July. Vol. 10. No. 4. pp. 283–293. With 4 charts. [5 refs.] [Med. School, Northwestern Univ., & Wesley Memorial Hosp., Chicago.]

This report presents biochemical data made during two years of two patients having fat diarrhoea—the so-called non-tropical sprue —with emaciation, anaemia and tetany. No metabolic studies in sprue compare with these. The main object was to study the tetany associated with fat diarrhoea. However, no indication of the cause of fat diarrhoea itself was found. Liver and pancreatic functions were normal as far as present clinical methods can determine. It was thought that the tetany was due to continued depletion of readily available calcium by years of excessive calcium excretion. Although they were equally susceptible to diarrhoea arising from fatty foods, these two patients differed in their degree of susceptibility to tetany. The first developed profound tetany with low blood calcium at two periods whilst the second case had little tetany and low blood calcium only when first studied. Fatty diarrhoea in the first case produced acute tetany. It was found that the ingestion of large amounts of calcium by the mouth prevented fat diarrhoea. On the other hand calcium loss by the bowel as a result of fat diarrhoea was not found in the present study.

P. H. M-B.

BAUMGARTNER (E. A.) & CASE (C. E.). **Reticulocyte Response in a Case of Tropical Sprue on a Diet not including Liver.**—*Clifton Med. Bull.* 1930. Oct. Vol. 16. No. 4. pp. 183–188. [10 refs.]

Before the advent of liver dietary the occasional rapid increase in the number of erythrocytes in cases of pernicious anaemia must necessarily have been accompanied by a corresponding rise in the reticulocytes and the same thing must have occurred in those cases of sprue with severe anaemia that improved. The present case indicates that the reticulocytes rise in sprue in the absence of a liver dietary. ASHFORD has already described a case on his regular sprue diet in which the rise was over 10 per cent.

In this instance the patient, a lady of 67 who had lived in China, developed typical sprue. At the time of her admission her weight was 134 lbs. Gastric analysis revealed a normal hydrochloric acid content.

* In the February 7 number of the same journal CALOV expresses doubt of the accuracy of the diagnosis. He asks for information on the appearance of the skin, abnormalities in the abdomen, composition of stools and diet.—ED.

The haemoglobin was 47 per cent., the red cells 2,070,000. On a high protein diet (protein 100 gms.) without liver, there was a reticulocyte increase to 9 per cent. on the 18th day. This is a slower response than occurs usually in a patient with pernicious anaemia or in sprue patients with severe anaemia who are given liver. The erythrocytes, which were larger during the severe anaemia, gradually decreased to the normal size.

P. H. M-B.

HERNANDEZ (Luis G.). **Pancreatic Juice in Normal Individuals and in Sprue.**—*Porto Rico Jl. of Public Health & Trop. Med.* 1930. Dec. Vol. 6. No. 2. pp. 209–216. [7 refs.] [School of Trop. Med., Univ., Porto Rico.]

In sprue it has been demonstrated that the entire nervous system, particularly the autonomic nervous system, is functionally altered, and therefore the nervous reflexes that control the flow of pancreatic juice are also probably altered.

Analyses of normal duodenal contents, as well as those of sprue patients, are given. A comparison is made of the Gross and Wohlgemuth's methods with those of Sokhey and Malandkar, from which it appears that the duodenal enzymes are present in sprue but are diminished in amount.

P. H. M-B.

HARRIS (R. M.). Tropical Sprue : Report of a Case.—*Southern Med. Jl.* 1930. Oct. Vol. 23. No. 10. pp. 950–953. [15 refs.]

SUAREZ (Ramon M.). "El tratamiento del esprú y el uso del extracto acuoso de hígado en su anemia."—*Bol. Asoc. Med. de Puerto Rico.* 1931. Mar. Vol. 23. No. 186. pp. 74–86. With 7 charts in text. [25 refs.]

TEDESCHI (C.). Sprue, pseudosprue o blastomicosi intestinale ?—*Arch. Ital. Sci. Med. Colon.* 1930. Oct. 1. Vol. 11. No. 10. pp. 577–594. With 15 text figs. English summary (5 lines). [Colonial Hosp., Derna, Cirenaica.]

VAIDYA (S. K.). Observations on Pernicious-Type Anaemias in the Tropics, and on the Disease called Sprue.—*Jl. Trop. Med. & Hyg.* 1930. Sept. 15. Vol. 33. No. 18. pp. 265–282. With 6 charts. [37 refs.]

WILKERSON (Fred). Sprue treated with Liver.—*Southern Med. Jl.* 1930. Oct. Vol. 23. No. 10. pp. 947–949. [9 refs.]

HELMINTHIASIS.

KHALIL (M.). **The Pail Closet as an Efficient Means of controlling Human Helminth Infection as observed in Tura Prison, Egypt, with a Discussion on the Source of Ascaris Infection.**—*Ann. Trop. Med. & Parasit.* 1931. Mar. 31. Vol. 25. No. 1. pp. 35–62. With 3 text figs. & 7 figs. on 4 plates. [18 refs.]

The diagnostic techniques were gravity precipitation of urine for schistosome eggs, a smear from the faecal surface and preferably from blood or mucus on it for the same, and flotation of faeces by Khalil's method in a conical Erlenmeyer flask. " This method is very efficient in detecting the ova of ancylostoma, trichostrongylus, and to some extent ascaris ova." [In the abstractor's tests, never controverted, this method collected on the average one hookworm egg in fifty.] In Tura Prison there are in use pail privies, in fact the system which has served Indian jails so excellently for very many years. As Khalil notes, its efficiency depends on trustworthy supervision ; examination in 1924 by the means noted of 2,610 Egyptian prisoners showed that whereas the percentage of ancylostome and schistosome infections fell with the length of stay in prison, ascaris and trichuris infections did not. As regards schistosomes, the jail water supply is from the Nile and the percentage of infection with *S. haematobium* of prisoners admitted in 1923 was in 1924 30·6 (Delta 18·1, Upper Egypt 15·7) of 278, and after 10 years' imprisonment 5 of 99. Villages close to the jail taking water from a canal have 75 per cent. of the population infected. As regards ancylostomes, the diagnostic test mentioned gave 67·3 per cent. infected in those admitted in 1923 and examined in 1924, while in those who had been imprisoned for 10 years it was 12. In a village 3 km. from the jail it was 88. From the prison the sewage is conveyed, apparently carried, to a farm isolated in the desert at a distance of 3 km. from the jail, stored in tanks till needed, and then used as the sole means of irrigating the soil ; the death of hookworm eggs by lengthy storage is apparently not aimed at. Here vegetables are grown in abundance, and removed with adherent soil to the jail kitchen. In this soil in the jail were found ascaris ova [hookworm larvae are not mentioned]. All vegetables are cooked. " It was evident that the hands of all prisoners engaged in the kitchen were contaminated and in turn they contaminate the food when it is being distributed after cooking." All 2,618 (8 were foreigners) prisoners were given 5 cc. of carbon tetrachloride on one day in May 1924, whether infected or not. " Only 52 complained of any symptoms as a result of the treatment. In many cases it was possibly malingering." In 1928, 945 of them remained. Among them the technique mentioned had shown infections as follows : 1924, 183 ; 1925, 47 ; 1926, 17 ; 1928, 5. Presumably there had been no treatment in the intervals.

Clayton Lane.

SERRA (Américo). **Helminths in Southern Porto Rico. An Analysis of 2,200 Fecal Examinations.**—*Porto Rico Jl. of Public Health & Trop. Med.* 1930. Sept. Vol. 6. No. 1. pp. 91–105. With 7 graphs. [Biol. Labs., Health Dept., Ponce, Porto Rico.]

Of the faecal specimens 2,000 were rural and 200 urban. The mode of examination was by 4 direct smears and about half were also

examined by the " brine flotation method "—which of the many is not stated, but the results are to be published later. Of the urban population 66·25 per cent. were found infected, and of the rural 90·05. Of the urban specimens the percentages infected with different parasites were : trichuris 58·25, hookworms 17·45, ascaris 5·2, *S. mansoni* 7·35, strongyloides 3·1, *H. nana* 0·55, *T. saginata* 0·10. The distribution by age, sex and locality is given.

C. L.

Stekhoven (J. H. Schuurmans) Jr. Ingewandswormen op Terschelling (Midsland). [**Intestinal Worms on Terschelling.**]—*Nederl. Tijdschr. v. Geneesk.* 1931. Feb. 21. 75th Year. 1st Half. No. 8. pp. 859–873. With 1 text fig. [1 ref.]

An investigation was carried out of the population on the island of Terschelling where it was found that an extreme degree of helminthic infection existed. The faeces were first examined in smears for the actual helminthic ova present. Quantitative estimation of the number of eggs per gram of faeces was made according to the method of Stoll. Soil infection was determined according to the method of Brown. Ascaris and trichuris were found, at Midsland, to be present in 36·7 and 53·1 per cent. of the population respectively. In West Terschelling the proportions reached 82·4 and 93 per cent. Infection was greatest in the earlier years of life and diminished somewhat after the 15th year. The origin of this extensive infection is found in the practice of the inhabitants to manure their gardens with human faeces. It is possible to demonstrate the helminthic ova in the soil. Oxyuris appear definitely to give rise to eosinophilia but the rôle of other worms in this regard is not so certain. Prevention of infection would most satisfactorily be obtained by disinfection of faeces.

W. F. Harvey.

Kudrjawzew (W.) & Scensnowic (W.). Vergleichende Abschätzung helminthoovoskopischer Methoden under den Bedingungen einer Massenuntersuchung der Bevölkerung. [**Comparative Value of Various Diagnostic Ovoscopic Methods in Helminthology for Use in Mass Surveys.**]—*Rev. Microbiol., Epidémiol. et Parasit.* 1930. Vol. 9. No. 3. pp. 427–436. [9 refs.] [In Russian. German summary.]

This is a critical evaluation of the various methods employed for the diagnosis of helminthic infections by means of eggs, in their application to mass surveys of the population. The comparison is based on an examination of 4,632 persons by the following three methods : Koch's method of scraping from the peri-anal folds for Oxyuris, the Bürett method and Fülleborn's method. The authors believe that examination by the three methods combined is the most practicable and exact one for surveys on a large scale. In a footnote, by the editor, Fülleborn's method of examination of the surface film combined with the examination of the sediment is recommended.

C. A. Hoare.

TARASSOW (W.). [**The Clinical Symptomatology of Helminthiasis.**]—*Pensée Méd. d' Usbéquistane et de Turquménistane.* Tashkent. 1930. Nov.–Dec. Vol. 5. No. 2–3. pp. 39–42. [6 refs.] [In Russian.]

The author has made clinical observations on 348 cases suffering from various types of helminthic infections (*Ascaris lumbricoides*, *Diphyllobothrium latum*, Taeniidae, *Trichuris trichiura*, *Enterobius vermicularis*, *Hymenolepis nana*). The object was to ascertain whether specific clinical symptoms were present upon which a differential diagnosis could be based. The symptoms observed in connexion with the various infections are given in tabular form, together with a record of similar observations by two other authors based on several hundred cases. Tarassow concludes that (1) the clinical symptoms in helminthiasis are not characteristic of any definite species of helminth, but are common to a whole series of different forms; (2) the clinical symptomatology alone provides no grounds for distinguishing the various forms of helminthic infections; and, therefore, (3) the name helminthiasis alone should be retained for all of them, irrespective of their nature.

C. A. Hoare.

FENG (L. C.). **Studies on Tissue Lesions produced by Helminths.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1931. Jan. Vol. 35. No. 1. pp. 1–10. With 4 text figs. [11 refs.] [Peiping Union Med. College, Peking.]

It is shown, by the study of four cestode, three trematode and two nematode species parasitizing the alimentary canals of animals, that some parasites produce a digestion of the surrounding tissues of the host, but that in others there is no evidence of this. The former sink deeply into the tissues and are surrounded by a homogeneous zone, for the nuclei do not stain and cell outlines are not visible; moreover this zone must be more or less liquid during life since it forms a mould of the anterior end of the worm. Feng particularly notes that this liquefying power is absent in *A. lumbricoides*; his observations do in fact raise the question whether its occasional presence does not explain those rare instances where this parasite produces perforation of the gut, and where hookworms penetrate deep into it.

C. L.

ONSLOW (D. V.). **The Prevention of Trouble due to Aquatic Growths in Condenser Systems, with Special Reference to the Destruction of Mussels. Critical Résumé.**—11 pp. The British Electrical and Allied Industries Research Association (incorporated). 1929. London: 36 & 38, Kingsway, W.C.2.

Condenser systems have been much hampered by the growth of mussels in suction pipes, those of the Bombay Electric Light Station being reduced in effective diameter from 24 to 20 in. in 6 months. The Manometer Chloronome* treatment adds chlorine in minute and

* Paterson Engineering Co., Ltd.

measured quantities to water. One-fifth part per million keeps mussels from appearing in tubes by removing their food; 1 part in 10,000 of copper sulphate acts in the same way. [The apparatus may prove useful in the prevention of schistosomiasis.]

C. L.

GRIFFITHS-JONES (E.), ATKINSON (H.) & HASSAN (Ali). **A Comparison of the Relative Killing Power of Chlorine and Chloramine on Schistosome Cercariae of the Human Type, together with a Note on the Relative Stabilities of Chlorine and Chloramine.**—*Ann. Trop. Med. & Parasit.* 1930. Dec. 18. Vol. 24. No. 4. pp. 503–525. [5 refs.] [Public Health Labs., Cairo.]

"1. Both *S. mansoni* and *S. haematobium* cercariae are susceptible to the action of chlorine and chloramine.

"2. One part per million available chlorine will kill the cercariae in two and a half to three hours in filtered water.

"3. Chloramine, when prepared in the apparatus supplied by Messrs. United Water Softeners, Ltd., and in accordance with the printed instructions which they supply,* is less effective than chlorine in killing the cercariae.

"4. Chloramine when prepared according to the 'Water cart method'† is more effective in killing the cercariae than bleaching powder. One part per million will kill the cercariae in one hour in filtered water.

"5. Chloramine prepared by admixture of the ammonium compound and the chlorine solution in syphon was found to be far less stable than chlorine prepared from bleaching powder or from chlorine bulb, whereas with chloramine prepared by the method used in the later experiments the reverse is the case. The stability of chloramine was demonstrated particularly in its resistance to absorption by matter in suspension and solution. Absorption by tap water is only slight but is higher in both raw Nile water and canal water.

"The absorption increases with the dose and also with the time of contact. The amount remaining after two hours' contact is roughly three-quarters of the dose in raw Nile water and rather less in canal water. The amount of residual chlorine when bleaching powder is used is distinctly less, i.e., about half the dose in raw Nile water and still less in canal water after two hours' contact."

C. L.

The printed instructions read as follows:—

* "'Unscrew cap of chlor-sparklet apparatus, fill to 50 c.cm. mark with water and dissolve *two* of these tablets therein. The ammonium solution resulting is to be mixed with the chlorine solution in the bottle thus forming active chloramine.'"

†"*Mono-chloramine.* Fill siphon to 1,250 c.cm. mark with water and discharge into it one chlorine bulb. *Shake well.* The siphon will then contain on an average 3 grammes of Cl_2. Fill up the kettle with water, crush a tablet of ammonium hydrogen carbonate, add it to the water in the kettle and stir well. 250 cc. of the chlorine water is then added to the kettle (the cap of the siphon can be used to measure this), and the mixture is then well stirred.

"Mono-chloramine is produced at once, and the contents of the kettle are emptied into the water cart (110 gallons) which now contains 0·6 gramme of Cl_2 (0·5 gramme = 1 part per million in the cart). In this process there is no loss of available chlorine.

"NOTE.—That the concentration of ammonia in the kettle is approximately 10 parts per million, and the concentration of chlorine 20 parts per million, also that the ammonia and chlorine must be added in the order stated."

Helmy (M. M.). **The Differentiation between Living and Dead Bilharzia Ova.**—*Jl. Egyptian Med. Assoc.* 1930. Nov. Vol. 13. No. 11. p. 550.

Helmy considers that the darkening and shrivelling of schistosome eggs and the loss of definition of their contents are evidence of what he calls "advanced death," and suggests that it would be better to take, as evidence of the passing from life to death, the cessation of movement in the flame cells. The editor claims that these movements can be seen by the expert microscopist only, and points out that the sign is only present while the morphology of the miracidium is still intact. [Satisfactory evidence for death with morphology still intact is surely just what Helmy wants to provide.]

C. L.

Carrosse. Enquête sur la bilharziose vésicale (*Schistosoma haematobium*) dans le Sud marocain et la région de Marrakech. [*S. haematobium* **Infestation in S. Morocco.**]—*Arch. Inst. Pasteur d'Algérie.* 1930. Mar. Vol. 8. No. 1. pp. 90–108. With 13 figs. (6 on 3 plates). [14 refs.]

In a paper mainly of local value, and that unfortunately lessened by the author's transfer, it is noted that of 30 local cases of schistosomiasis 15 were in Senegalese soldiers while there were 11 recent infections among Europeans and four among Berber Arabs. From the urines of the last, 8 out of 30 *Bullinus contortus* became infected but *Planorbis metidjensis* remained free as did *Physa subopaca, Limnaea ovata, Melanopsis chlorotica, M. maroccana,* and *Melanoides tuberculatus.* Cercariae from Bullinus failed to infect *Mus decumanus.*

C. L.

Ryrie (C. A.). **A Case of Concurrent Leptospirosis and Schistosomiasis in Malaya.**—*Malayan Med. Jl.* 1930. Dec. Vol. 5. No. 4. pp. 148–149.

A youth of 18 with acute high fever had been given quinine orally and intramuscularly ; he had a total white count of 17,000, increase of large mononuclears, eosinophilia 6 per cent., no leptospira in blood but an injected guineapig later died with signs typical of leptospirosis. His father too having had fever, the son received intramuscularly 30 cc. of his serum and intravenous tartar emetic. Delirium promptly ceased and convalescence set in, but on the third day he passed two pints of urine seemingly pure blood, and the next specimen contained ova of *S. haematobium.* Under treatment with intravenous tartar emetic on alternate days over a month he made an uninterrupted recovery. He had lived in South Africa.

C. L.

Mohammed (Abdel Shafi). **Contribution to the Study of Egyptian Schistosomiasis.**—*Ann. Trop. Med. & Parasit.* 1930. Dec. 18. Vol. 24. No. 4. pp. 563–574. With 12 figs. on 3 plates. [7 refs.]

Four cases are described illustrating the proliferative type of schistosome lesion.

1. Subperitoneal papilloma 8 cm. long by 2 cm. wide hanging from the sigmoid with diffuse distribution of *S. mansoni* ova within it, found at post-mortem examination.
2. Multiple tumours in a piece of great omentum containing ova of *S. mansoni*, removed from a hernial sac.
3. Diffuse schistosomiasis of seminal vesicles and vasa deferentia with ova of *S. haematobium*, removed after death.
4. Fibromyoma of the uterus containing ova of *S. mansoni*, removed at operation.

C. L.

Brumpt (E.) & Chevallier (P.). La rate et les spléno-hépatites des bilharzioses expérimentales. [**Lieno-hepatitis in Experimental Schistosomiasis.**]—*Ann. Parasit. Humaine et Comparée.* 1931. Jan. 1. Vol. 9. No. 1. pp. 15–67. With 16 text figs. & 4 figs. on 1 plate. [48 refs.]

The paper deals with infections of *S. haematobium*, *S. mansoni*, and *S. bovis* in mice, in which they survived from 37 to 369 days, no difference in bodily reaction being noted in the three species. Lesions in mice are nodular [granulique] and toxic. The former occur particularly in the liver, surrounding an egg and are in structure essentially tubercles without caseation but with fibrosis. The latter lesions are caused by adult forms, are not found in the spleen since in mice adults have not been found there though eggs abound, may be so severe as to kill rapidly with necrotic foci, or may be shown merely by a slight endophlebitis. Liver and spleen are held to behave independently, lesions of one not reacting on the other; nor are such conditions as ascites or intestinal haemorrhage held to be caused by either, but to be manifestations of local lesions of intestine and peritoneum. In general, lesions have slight resemblance to those occurring in man, though tubercle formation is identical with that caused by *Myco. tuberculosis* in man. Owing to the almost complete absence of ova in the spleen of man, the splenic condition in mice is not that found in man.

C. L.

Raynal (J.). Sur la bilharziose intestinale et sa répartition géographique. [**Intestinal Schistosomiasis and its Geographical Distribution.**]—*Rev. Prat. Malad. des Pays Chauds.* 1930. Aug. Year 9. Vol. 10. No. 8. pp. 347–354, 357–366. [53 refs.]

A review of the whole subject which should be consulted in original.

C. L.

Maciel (Heraldo). Sobre o emprego da fuadina no tratamento da eschistosomose intestinal. [**Fuadin in the Treatment of Schistosomiasis** (*S. mansoni*).]—*Rev. Med.-Cirurg. do Brasil.* 1931. Feb. Vol. 39. No. 2. pp. 43–52. [2 refs.]

Fuadin, or Heyden 693, is a trivalent antimony compound, containing 13·5 per cent. antimony. It is a white powder but is also on the market as a solution containing 7 per cent. or 0·0085 gm. Sb per cc. It is a modification of antimosan, with 1 per cent. more trivalent antimony.

Animal experiment showed that the toxic dose was far higher than the effective therapeutic dose. Disagreeing with KHALIL and other workers in Egypt, the author states that it has a toxic action on the liver and needs careful watching, but as a rule it was well tolerated. The drug is best administered by deep gluteal injection ; the complete course is 10 injections, starting with 1·5 cc., following with one of 3·5 cc. and eight of 5 cc., the first three on successive days, the remainder at 2-day intervals. For children, who bear it well, it is better not to exceed 1 cc. per 10 kilo body weight or a total not above 1 cc. per kilo.

PETER reported 75 cured out of 80 patients, and KHALIL 61·4 per cent. of 2,041 cases. The author gives details of 7, only one of whom showed intolerance, vomiting and prostration. During treatment there is a rapid increase in eosinophiles to 20 per cent. or more, but this returns to normal usually within 60 days after the drug is stopped. In patients not infected with schistosomes injection of the drug caused no rise in these corpuscles. H. H. S.

SZIDAT (L.) & WIGAND (R.). Ueber Fuadinwirkung bei Bilharziella-Enten. (Parasitologische, klinische und pharmakologische Beobachtungen.) [**Action of Fuadin in Bilharziella of the Duck.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1931. Mar. Vol. 35. No. 3. pp. 159–171. With 5 text figs. [7 refs.] [Pharmacol. Inst. & Med. Clinic, Univ., Konigsberg i. Pr.]

It is held that the duck and its Bilharziella is no test object for the action of antimony on bilharzia. C. L.

OZAWA (Makoto). **Experimental Study on the Anemia caused by Schistosomiasis japonica.**—*Japanese Jl. Experim. Med.* 1931. Feb. 20. Vol. 9. No. 1. pp. 39–45. [8 refs.]

These studies were carried out on 5 healthy adult rabbits who were given a heavy experimental infection with cercariae of *S. japonicum*. The worms began to oviposit about the fifth week. The numbers of erythrocytes and thrombocytes began to fall in the second week, by the fifth week had halved and continued to fall afterwards. Haemoglobin fell in like manner, though the colour index was always less than 1. The numbers of reticulated and polychromatic erythrocytes first rose and then fell. Nucleated red cells first appeared and then disappeared. Leucocytes fell steadily at first, to rise sharply at the 5th week and thereafter rapidly to lessen, eosinophils disappearing suddenly when the case became serious. In the rise at the 5th week large mononuclears took a disproportionate part. In the proximal epiphysis of the humerus there was a marked decrease of nucleated red cells and they were deficient in haemoglobin. Megacaryocytes also decreased or degenerated, as did all cell components. The spleen showed appearance of extra-medullary haemopoietic tissue and atrophy of follicles, the same haemopoietic tissue appearing in liver and lymph glands. The whole is considered as a toxic aplastic anaemia. C. L.

BERCOVITZ (Z.). **Clinical Studies on Human Infestations with the Liver Fluke** (*Clonorchis sinensis*).—*Amer. Jl. Trop. Med.* 1931. Jan. Vol. 11. No. 1. pp. 43–60. With 2 figs. [14 refs.] [Presbyterian Mission Hosp., Andong, Korea.]

In these infected Korean patients indigestion and enlarged liver were the commonest symptoms. It is advised that diagnosis should be by

microscopic examination of the second watery stool after magnesium sulphate, and that if ova are not found in a smear salt flotation should be used, which suggests that, unexpectedly, these particular operculated eggs float in it. The point round which the paper is really written is biliary drainage by using the duodenal tube introduced through the mouth and left *in situ* for days. Such a sound removed large quantities of bile, and examination of this showed great variations, as great as an eighteenfold difference in the egg content of the bile in a quarter of an hour. It also removed large numbers of worms and curiously enough relieved night blindness occurring in the infected. Moreover eggs may be absent in the faeces but present in the bile, though whether this is merely a diversion upwards of eggs in one wearing a duodenal tube is not clear. On the other hand several of these drained cases died within a few days of leaving hospital; so that while a certain amount of drainage under careful supervision is held of value in removing toxic materials, the technique should be practised only in hospital and by experts. C. L.

YOSHIDA (Tomokazu). Ueber das Schmarotzen von *Clonorchis sinensis* in dem Pankreas das Menschen. [*Clonorchis sinensis* **in the Human Pancreas.**]—*Okayama-Igakkai-Zasshi* (*Zent. d. Okayama Med. Gesellsch.*). 1930. Nov. Vol. 42. No. 11. pp. 2807–2811. [8 refs.] [In Japanese. German summary p. 2812.]

Yoshida reports three cases of hyperinfection with *Clonorchis sinensis* in which the pancreas was infected as well as the liver. There was dilatation and hypertrophy of the pancreatic ducts, and hypertrophy of the connective tissue with atrophy of the glandular cells of the organ. The flukes in the pancreas were mostly in its tail. C. L.

YOSHIMOTO (Seiichi). Untersuchung des Stoffwechsels bei der *Clonorchiasis sinensis*. (*Distomiasis spalthulata* od. *Distomiasis hepatica.*) II. Mitteilung. Experimentelle Untersuchung ueber die Phosphor- und Kalziumausscheidung im Harn bei der Kaninchenclonorchiasis. III. Mitteilung. Experimentelle Untersuchung ueber den Purinstoffwechsel bei der Kaninchenclonorchiasis. [**Metabolism in** *Clonorchis sinensis* **Infestation.**]—*Arb. a. d. Med. Univ. Okayama.* 1930. Vol. 2. No. 2. pp. 225–232. [12 refs.]; pp. 267–278. [22 refs.] [Forensic Inst., Med. Univ., Okayama.]

II. In early stages of infection rabbits show no marked change in urinary excretion of calcium or phosphorus. Later these substances increase in parallel fashion, so that shortly before death their quantities are doubled, the result of increased acidity and liver damage.

III. The fat content of the liver is in general lowered by oral or subcutaneous administration of biliary acids, so that fat-splitting in the liver seems to be furthered by bile acids. The respiratory quotient is also lowered. C. L.

YOSHIMOTO (Seiichi). Ueber die Gerinnungszeit des Blutes bei der Kaninchenclonorchiasis. [**Coagulation Time of the Blood in Clonorchiasis of Rabbits.**]—*Okayama-Igakkai-Zasshi* (*Zent. d. Okayama med. Gesellsch.*). 1931. Feb. Vol. 43. No. 2. pp. 453–458. [31 refs.] [In Japanese. German summary p. 459.] [Forensic Inst., Med. Univ., Okayama.]

In severe clonorchiasis the coagulation time of the blood is lengthened, and this must be a factor in causing bleeding from mucous membranes,

retinal haemorrhage and anaemia. The change is held to be due to the circulation of biliary constituents and to lessening of fibrinogen, blood platelets, thrombokinase and calcium.

C. L.

MAXWELL (James L.). **Paragonimiasis in China. A Preliminary Report.**—*China Med. Jl.* 1931. Jan. Vol. 45. No. 1. pp. 43–49. With 2 plates.

Maxwell reviews the reports of cases of paragonimiasis probably acquired in China. He summarizes the conditions essential for the spread of infection, namely: hilly country, a running stream close to a village with melania and potamon in it, and the habit of eating raw crabs. He found just such an area in the spot from which YING of Shaohing had reported infection. Having brought a travelling microscope he established himself in the dispensary courtyard, examined the sputa of five likely persons by means of such light as the curious crowd would allow, and found paragonimus eggs in two, both women. "It was especially satisfactory to establish the diagnosis in women rather than in men as there was little likelihood of the women having travelled much, and as a matter of fact it was doubtful whether either of them had been far outside the village limits." There is then, it is noted, at least a hint that paragonimiasis may be widespread in China in places where conditions are favourable.

C. L.

GOLOVINE (S.). Un cas de distomatose des poumons. [**Case of Infestation by Lung Fluke.**]—*Rev. Microbiol., Epidémiol. et Parasit.* 1930. Vol. 9. No. 3. pp. 437–439. [In Russian. French summary.]

The author describes a case of *Paragonimus westermanii* infestation of the lungs of a Korean, admitted to the tuberculosis sanatorium in Leningrad. Typical eggs of the trematode were found scattered amongst pus corpuscles in the sputum. The author emphasizes the importance of examining the fresh sputum, since in fixed and stained preparations the eggs could not be detected. The patient in the Far East was in a habit of consuming raw meat, including that of crayfish and crab.

C. A. Hoare.

LIMTSCHER (L. F.) & SANKIN (S. L.). Der zweite Fall von Paragonimiasis in U.S.S.R.] [**The Second Case of Paragonimiasis [recorded] in U.S.S.R.**]—*Zent. f. Bakt.* I. Abt. Orig. 1929. Sept. 18. Vol. 113. No. 7/8. pp. 535–536. [5 refs.]

A Korean of 22 who had just come to Moscow showed paragonimus ova in sputum and faeces.

C. L.

KAMISAKA (T.). **How to differentiate between the Eggs of *Fasciola hepatica* and *Fasciolopsis buski*.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1930. Nov. No. 308. [In Japanese. English summary p. 71.] [Govt. Med. College, Taihoku, Formosa.]

Eggs of *Fasciolopsis buskii* may be distinguished from those of *Fasciola hepatica* by the structure of the vitelline cells. The granules

of the former are evenly distributed in each cell so that they are highly refractive with nuclei clearly visible, while in the latter they accumulate round the nuclei giving the cells a dark green or dark brown centre with a very much lighter periphery.

C. L.

HOFFMAN (W. A.). **The Intermediate Host of *Fasciola hepatica* in Porto Rico.**—*Porto Rico Jl. of Public Health & Trop. Med.* 1930. Sept. Vol. 6. No. 1. pp. 89–90. With 1 plate. [4 refs.] [School of Trop. Med., Univ. of Porto Rico, San Juan.]

Cercariae structurally identical with those of *Fasciola hepatica* (which has been reported from man in Cuba, Porto Rico and Venezuela) were yielded by *Lymnea cubensis*, allowed to encyst for about 24 hours and the metacercariae fed to guineapigs. In these animals death took place in 23 to 33 days with young adults of *F. hepatica* in the liver. The work of VOLKENBURG* is thus confirmed.

C. L.

HECKENROTH (F.) & ADVIER (M.). Un cas de distomatose hépatique à *Fasciola hepatica*, en Corse. [**Case of *F. hepatica* Infestation, in Corsica.**]—*Bull. Soc. Path. Exot.* 1931. Jan. 14. Vol. 24. No. 1. pp. 46–49. [2 refs.]

The first case reported from Corsica. There were eggs in the stools but no eosinophilia; complement deviation was negative. Stovarsol was given in tablets, 3 or 4 daily for 4 days with 4 days' interval. The daily total dose is unstated. Under this treatment fever and diarrhoea ceased and the stools, instead of being yellow and watery and 5 or 6 daily, became first pasty and then formed. The man could then eat ordinary food and appeared cured; a few eggs were seen on two later occasions, but none on the last examination.

C. L.

MTSCHEDLIDZÉ (J.). Sur un cas de dicrocoeliose chez l'homme. [**Case of Dicrocoeliasis in Man.**]—*Ann. Parasit. Humaine et Comparée.* 1931. Jan. 1. Vol. 9. No. 1. pp. 68–71. [4 refs.] [Central Trop. Station, Batum, Georgia.]

The faecal examinations which have been made latterly on a grand scale in Russia have disclosed over 100 cases in which the eggs of this parasite have been found in the faeces, though in some they have merely been ingested in infected liver and passed unaltered per anum.

A case is reported in a boy of 9 fed on milk only and examined a number of times with invariable discovery of these eggs. Subcutaneous injections of emetine were given beginning at 0·03 gm. daily and increasing in quantity to an unstated amount. There were three courses each apparently of 4 days with a three days' interval. By the end, the spasmodic abdominal pains with vomiting which had occurred had ceased, an enlarged liver had somewhat diminished and its tenderness lessened. The child was looked on as cured and removed by his parents.

C. L.

* Report of the Porto Rico Agricultural Experiment Station, 1928: 1929. Dec. p. 36.

Blajin (A. N.). [**Pseudo-Dicrocoeliasis.**]—*Trop. Med. & Veterin.* Moscow. 1930. Vol. 8. No. 2. pp. 11–15. With 5 text figs. [In Russian.]

In view of the alarming number of cases of human infection with *Dicrocoelium lanceolatum* in some parts of Russia, due to increased consumption of liver amongst the poorer classes of the population, the author, working in the Caucasus, has conducted an investigation with the object of discriminating between genuine and spurious infections. The diagnosis was based on the appearance of the ova in stools. In true infections practically all the ova are ripe, whereas the majority of ova coming from infected liver taken as food are undeveloped, and are easily distinguishable from the former. Apart from this, in pseudo-dicrocoeliasis the ova show characteristic alterations due to cooking of the infected liver. The appearance of the different kinds of ova are described and depicted. Their origin can thus be readily established by microscopic examination of suspected stools.

C. A. Hoare.

[This is in contrast to the statement of Koulaguine (*Russian Journal of Tropical Medicine*, 1929, Vol 7, p. 135) that even when the liver containing them has been boiled, roasted or baked, the eggs which it contained appear unaltered in the faeces.—C. L.]

Skrjabin (K. J.) & Podjapolskaja (W. P.). *Nanophyetus schikhobalowi* n. sp. Ein neuer Trematode aus dem Darm des Menschen. [**A New Trematode from Human Gut.**]—*Zent. f. Bakt.* I. Abt. Orig. 1931. Jan. 20. Vol. 119. No. 5/6. pp. 294–297. With 3 text figs. [4 refs.] [Trop. Inst., Moscow.]

In the Amur and Usuri regions faecal examinations of men showed an operculated egg with a thickening at the opposite pole, 0·065 to 0·072 mm. long by 0·004 to 0·048 mm. broad. Thymol, 5 gm. given once, produced two species of trematodes, one *Metagonimus yokogawai*, the other 0·5 mm. long and believed to be a new *Nanophyetus* and named *N. schikhobalowi*, which is described and differentiated.

C. L.

Tubangui (Marcos A.). **Trematode Parasites of Philippine Vertebrates, II : Two Echinostome Flukes from Rats.**—*Philippine Jl. Sci.* 1931. Mar. Vol. 44. No. 3. pp. 273–283. With 2 plates. [10 refs.] [Bureau of Science, Manila.]

Twenty-one specimens of *Euparyphium ilocanum* reported by Garrison from man have been found in a rat, as has a new species *Euparyphium guerreroi*. C. L.

Bonanno (A. M.). Le comportement de quelques réactions biologiques dans l'échinococcose après l'intervention chirurgicale. [**Biological Reactions after Operation in Hydatid Disease.**]—*Boll. Sezione Ital., Soc. Internat. di Microbiologia.* Milan. 1931. Mar. Vol. 3. No. 3. pp. 67–68. [Inst. of Bact. & Immunol., Royal Univ., Turin.]

Bonanno does not agree that persistence of biological reactions after surgical intervention in hydatid disease implies the presence of another cyst. It has not, he holds, been demonstrated that these reactions

must disappear when antigens cease to enter the circulation ; indeed he thinks that this happening is excluded by immuno-biological theory. The disappearance of these reactions is progressive, first the haemoclasic reaction of d'Amato (lessening of the red corpuscles within an hour of intradermal injection of hydatid fluid), next eosinophilia, then the Ghedini-Weinberg reaction, and lastly that of Casoni. The last two may persist for 5 to 7 years. He is strengthened in his opinion by his failure to find a hydatid of the liver in spite of several punctures when the abdomen had been opened a second time in a case showing such reactions. C. L.

i. Croste (René). Un cas d'échinoccose secondaire guéri par le stibyal. [**Recovery of a Case of Secondary Echinococcosis after Treatment by Stibyal.**]—*Ann. Parasit. Humaine et Comparée.* 1930. July 1. Vol. 8. No. 3–4. pp. 450–451. [Civil Hosp., Bayonne.]

ii. Dévé (F.). A propos du traitement de l'échinococcose par l'émétique. [**Treatment of Hydatid by Tartar Emetic.**]—*Ibid.* 1930. Oct. 1. Vol. 8. No. 5. pp. 566–568. [14 refs.]

i. In a region (Bayonne) where hydatid is not rare, a woman of 40 had a subhepatic tumour which suddenly disappeared with slight pain. It was a hydatid which ruptured and sowed the whole peritoneum with scolices with the result that from time to time she suffered thirteen laparotomies and came to look on one as all in the day's work. At these, 20 large cysts were removed and in addition hundreds strewn over the peritoneum were destroyed by thermocautery. Latterly stibyal, 1·8 gm. in all, was given. Apparently since then, at all events during the last five years, no further interference has been needed and Croste believes that the drug was concerned in the cure.

ii. Commenting on Croste's case, Dévé notes that spontaneous cure of hydatid has not been taken sufficiently into consideration ; and that in 5 of 6 reported cases (Hamilton Fairley and Dew each 2, Cawston and Garin each 1) the parasiticidal effect of tartar emetic, whether the potassium or sodium salt, has been exactly nil.

C. L.

Goodale (Raymond H.). **Hydatid Cyst of the Brain.** —*Amer. Jl. Trop. Med.* 1931. Jan. Vol. 11. No. 1. pp. 61–64. With 1 text fig. [3 refs.] [Path. Dept., Amer. Univ., Beirut.]

An Englishman, who had had penile ulcer 4 years earlier, had headache, vomiting, some oedema of the left optic papilla, unsteady gait, a positive Babinski reaction and increased ankle and knee jerks ; Wassermann strongly positive. He improved under neosalvarsan and mercury, but on the 24th day died in convulsions. A hydatid cyst 6 cm. in diameter containing degenerated scolices lay in the right parietal region.

C. L.

Broughton-Alcock (W.) & Weinbren (M.). **Generalized Infection of Muscles with** *Cysticercus cellulosae* ; **Measurements of Cysts and Comparison with those of** *Trichinella spiralis.*—*Proc. Roy. Soc. Med.* 1930. Dec. Vol. 24. No. 2. pp. 222–224 (Sect. Trop. Dis. & Parasit. pp. 6–8). With 2 text figs. [1 ref.]

A radiogram taken of a knee injured by a gunshot showed calcified *Cysticercus cellulosae* about ¼in. [6 mm.] long in the muscles. Leiper

arranged with Sir Arthur KEITH that a radiogram from a specimen of trichinosed muscle from the College of Surgeons museum should also be taken with its calcified cysts 0·4 mm. diameter. The two figures illustrate the two appearances.

C. L.

KOBAYASHI (Hidekazu). **Studies on the Development of *Diphyllobothrium mansoni* Cobbold, 1882 (Joyeux, 1928). II. On the Conditions of Development of the Eggs of *Diphyllobothrium mansoni*.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1930. Oct. No. 307. [In Japanese. English summary pp. 61–62.]

——. **Correction and Additional Observation on the Propagatory Cells relating to my Paper on "Embryonal Development in the Egg of *Diphyllobothrium mansoni*."**—*Ibid.* [In Japanese. English summary p. 63.] [Govt. Med. College, Taihoku, Formosa.]

The optimum temperature is 24° C. to 28° C., and in Taihoku, Formosa, [natural] hatching shows a high rate from June to September. The lower and upper limits are 15° C. and 40° C. Eggs are easily poisoned and alkalis are less harmful than acids; darkness and direct sunlight lower the rate of development remarkably, as does the presence of much faecal matter. Drying stops development. Under the head "toxicity" appears: "A hypertonic medium tends to prevent development; also heavy water pressure prevents the development."

C. L.

KOBAYASHI (Hidekazu). **Studies on the Development of *Diphyllobothrium mansoni* (Cobbold, 1882) Joyeux, 1927. (Third Report.) Experimental Studies on the Mode of Infection by the Mature Procercoid.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1931. Jan. Vol. 30. No. 1 (310). [In Japanese. With 31 figs. on 2 plates. English summary pp. 3–8.] [Govt. Med. College, Taihoku, Formosa, Japan.]

The mode of infection of the second intermediate host was studied. In oral infection of the frog larvae enter the body cavity from the alimentary canal, "move into the chest cavity through the diaphragm," enter muscles and have then a tendency to pass back into the femoral muscles; in infection of the mouse the tendency is to move forwards to the neck. Infection can occur through the mucous membrane of the vagina and conjunctiva in the mouse, and through its injured, blistered or healthy skin, in the last case more easily in the young animal. On his own skin (age 28) Kobayashi produced evidence of penetration with itching and a wide halo of redness. Excision of the affected skin and subcutaneous tissue revealed 3 plerocercoids lying in tunnels in the dermis and subdermis. Later two further excisions of hard roundish painless pieces of subcutaneous tissue revealed plerocercoids, the second 47 days after infection.

C. L.

KOBAYASHI (Hidekazu). **Studies on the Development of *Diphyllobothrium mansoni* Cobbold 1882, (Joyeux, 1927). (Fourth Report.) Hatching of the Egg, Onchosphaera and Discarding of the Ciliar Coat.**—*Taiwan Igakkai Zasshi (Jl. Med. Assoc. Formosa).* 1931. Feb. Vol. 30. No. 2 (311). pp. 133–147. With 19 figs. on 1 plate. [In Japanese. English summary pp. 15–16.] [Govt. Med. College, Taihoku, Formosa.]

A hatched onchosphere rises to within a few millimetres of the surface and swims there for 2 or 3 hours mainly with counter-clockwise rolling, though from what aspect viewed is not stated. This is the period of infectivity. In effecting penetration of a host the larva by means of its hooks first tears its way out of the onchosphere through the ciliate membrane.

C. L.

BONNE (C.). Een zonderlinge Sparganum infectie. [**A Peculiar Sparganum Infection.**]—*Geneesk Tijdschr. v. Nederl.-Indië.* 1930. Dec. 1. Vol. 70. No. 12. pp. 1235–1238. With 2 figs. on 1 plate. [Med. High School, Batavia, Java.]

The post-mortem examination of a lunatic Malay man of 35 showed the existence of a large haemorrhagic infarct of the right lung, a local fibrinous peritonitis round the ascending colon, some smaller haemorrhagic and anaemic infarcts in the kidneys and some cerebral haemorrhage.

In the arteries of the infarcted part of the right lung pieces were found (partly dead, partly living, and one carrying the head) apparently of one individual of *Sparganum mansoni* (or at least of a closely related species), the larval stage of *Diphyllobothrium mansoni*. It is likely that the pathological findings are to be ascribed to the presence of the worm, no other causes being found.

Apart from the rarity of man being the intermediate host of this tapeworm, the localization in the lung is very peculiar, but it may be accounted for by the presence of an open foramen ovale in the patient's heart.

W. J. Bais.

VERGEER (Teunis). **Causes underlying Increased Incidence of Broad Tapeworm in Man in North America.**—*Jl. Amer. Med. Assoc.* 1930. Nov. 22. Vol. 95. No. 21. pp. 1579–1581. [9 refs.] [Zool Dept., Univ. of Michigan, Ann Arbor.]

" Investigation has demonstrated that dogs in the region extending from Ely, Minn., north into Canada are heavily infested with *Diphyllobothrium latum*, the broad tapeworm of man, and are largely responsible for the continued infestation of fish with the larvae, which may develop in man.

" Numerous eggs typical of those of *D. latum* were found in four of ten samples of feces of wild bears.

" Dogs and wild carnivora may cause the further distribution of this parasite into uninhabited, as well as heavily settled, regions in North America."

C. L.

Miller (Harry M.), Jr. **Immunity of the White Rat to Superinfestation with *Cysticercus fasciolaris*.**—*Proc. Soc. Experim. Biol. & Med.* 1931. Feb. Vol. 28. No. 5. pp. 467–468. [2 refs.] [Zool. Dept., Univ., Washington.]

This paper continues a line of investigation already noted (*ante*, p. 205, last sentence of abstract). Rats were fed on onchospheres, and a like feast was repeated after six months. The onchospheres of the second feeding did not grow in the already infected rats, but did so readily in controls.

C. L.

Loeper (M.) & Tonnet (J.). Production d'acide oxalique par le taenia. [**Production of Oxalic Acid by Tapeworm.**]—*C.R. Soc. Biol.* 1931. Mar. 13. Vol. 106. No. 9. pp. 716–717. [1 ref.]

In cultures of *Bact. coli*, moulds, fungi and yeasts, oxalic acid is often produced from glycogen or sugar. Brault and Loeper showed 30 years ago that tapeworms were rich in glycogen; the present authors now show that when a tapeworm is kept for 24 hours in an incubator the glycogen gives place to glucose and oxalic acid. The last combines with the calcium, so abundant in these worms, to form crystals of calcium oxalate.

C. L.

Fairley (N. Hamilton). **Serological and Intradermal Tests in Filariasis. A Preliminary Report.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1931. Apr. 25. Vol. 24. No. 6. pp. 635–648. [11 refs.]

The antigen used was *Dirofilaria immitis* collected, washed and dried by Le Sueur of Sarawak, it being estimated that 1 gm. contained 250 to 300 worms. For the complement fixation test, preliminary experiments having indicated that alcoholic was more potent than saline extract of the antigen, the former was used throughout those here recorded. The paper describes exactly the routine technique used, the standardization of antigen, and the method of setting up the test. Of 70 sera examined 59 were negative. These included 2 of hepatic echinococcosis, 2 of schistosomiasis, infections with taenia, ascaris, hookworm, trichuris and clonorchis, as also three old cases of *F. bancrofti* infestation. The 11 positives are considered below. The intradermal skin tests were begun quite independently, but strikingly confirm those of Taliaferro and Hoffman (*ante*, p. 214). The technique is that which Fairley has used for schistosoma and hydatid, and as regards detail he now injects 0·25 cc. of a 0·1 per cent. saline extract of dirofilaria powder, which dosage brings into line the tests on all three parasitic groups and makes them comparable. Large doses may be dangerous. Thus Case No. 8 after receiving 0·25 cc. of a 1 per cent. saline extract collapsed with anaphylactic shock, but recovered. The intradermal reaction is of two kinds: immediate, with diffuse erythema and a rapidly increasing wheal with peripheral pseudopodia-like outrunners reaching a maximum diameter within thirty minutes of 2·3 cm.; delayed, with deep blubbery swelling 4 to 7 cm. long and 1 to 3 cm. deep, beginning in 1 to 4 hours, and reaching a maximum next day when it may involve a considerable part of the arm and produce stiffness, heaviness and tension.

The table, which has been compiled from the paper, makes it clear that both tests were positive in six cases of active loiasis, in one of

Case.	Filaria concerned.	Complement fixation test.	Intradermal skin test.	Notes.
1	*L. loa* ...	+	+	Actively infected: from West Coast of Africa.
2	*L. loa* ...	+	+	,, ,,
3	*L. loa* ...	+	+	,, ,,
4	*L. loa* ...	+	+	,, ,,
5	*L. loa* ...	+	+	,, ,,
6	*L. loa* ...	+	+	,, ,,
7	*F. bancrofti*...	+	+	30 years' residence in Calcutta. Operation for right hydrocele and hernia 1913; left hydrocele 1930, fluid swarming with *Mf. bancrofti*. Now no microfilariae in night blood. Eosinophilia 6 per cent.
8	*F. bancrofti*...	—	+	Indian from Calcutta. Hydrocele and mass involving right spermatic cord. Painful swellings along left and right basilic veins. Excision of last showed a degenerating filaria. No microfilariae in night blood. Eosinophils 5 per cent.
9	*F. bancrofti* ...	—	+	Missionary from Samoa. Elephantoid fever diagnosed by Manson in 1900. Left testis removed at operation showed a calcified filaria in the tunica vaginalis. No microfilariae.
10	—	+	+	Indian suffering from kala azar.
11	—	+	—	Gastric carcinoma. Resided in endemic area for many years. No clinical signs. No microfilariae.
12	*O. volvulus* ...	±	+	Nodule recently removed containing adult male and female worms.
13	*F. bancrofti*...	—	+	European from Calcutta. Lymphangitis last year and microfilariae then reported. None now. Eosinophilia 1 per cent.
14	—	+	+	West Indian with latent syphilis. Long residence in endemic area.

unquestioned infection with *F. bancrofti*, in two men who had lived in endemic areas but had no clear evidence of filariasis, and partly positive in a case of onchocerciasis after removal of a nodule. The complement fixation test was negative and the intradermal test positive in three undoubted cases of filariasis [perhaps no longer with living worms] ; while the reverse was the case in a gastric carcinoma patient who was assumed to be infected by reason of the positive complement fixation.

" The tests themselves appear mutually complementary, since the complement fixation reaction detects circulating antibody and affords an index to more active infestation, while the intradermal test taps residual intracellular antibody which may persist long after circulating antibody and the parasites themselves have disappeared."

" The delayed reaction obviously arises from a progressively increasing oedema of the subcutaneous tissues radiating outwards from the site of injection, and probably depends on extensive vascular dilatation and increased permeability of its vessels caused by " H substance." This phase of the reaction is the one producing appearances so closely akin to Calabar swellings, and the available evidence certainly supports Fülleborn's view in regarding Calabar swelling as an example of localised anaphylaxis."

C. L.

O'Connor (F. W.). **Filarial Periodicity, with Observations on the Mechanism of the Migration of the Microfilariae from the Parent Worm to the Blood Stream.**—*Porto Rico Jl. of Public Health & Trop. Med.* 1931. Mar. Vol. 6. No. 3. pp. 263–272. With 12 plates. [3 refs.] [College of Physicians & Surgeons, Columbia Univ., New York, & School of Trop. Med., San Juan, Porto Rico.]

The title of this paper shows the two subjects with which it deals.

Regarding filarial periodicity O'Connor describes a specimen of testis and cord, with hydrocele, which had been forwarded to him after removal at 5 p.m. from a Porto Rican who had died 6 to 12 hours earlier. The lymphatics were much dilated and hypertrophied, indicating intra-abdominal lymphatic obstruction. Eight adult *Filaria bancrofti* were found after sectioning most of the specimen. Only one was free from calcification, a female with morphology clearly made out, containing no microfilariae but with the posterior two-thirds of the uterus full of non-embryonated eggs. The only place in the body* where microfilariae were found was a zone beginning half an inch above the only living adult and extending upwards for one and a half inches. This is a point of fact, not of interpretation. The conclusion is : " Histological studies suggest that the hypothesis of Clayton Lane to the effect that the phenomenon of filarial periodicity is due to a simultaneous cyclical parturition of the gravid female filaria is correct."

Regarding the mechanism of migration, O'Connor reports microfilariae in the thickness of the wall of the lymphatics and in every phase of transit through it " just leaving the lumen, in the thickness of the wall entering the blood vessels in the wall and entering the blood vessels outside the adventitia. . . . The sheath could be made out

* " Careful studies made later of sections from all organs of the body failed to reveal any parasites in the blood vessels of the general circulation."

in some sections and in a few it seemed to be enlarged or ballooned anteriorly. . . . While many parasites were still present in the walls of the lymphatics the overwhelming majority were in the adjacent blood vessels." The findings then are interpreted as showing that microfilariae, although enclosed in sheaths, progress through the tissues [see ACTON and RAO *infra*]. It is suggested that in the periodic form of Porto Rico filariasis parturition is diurnal, taking place about 2 p.m., and that microfilariae remain in the local small arteries till they migrate thence to the general circulation about 6 p.m.

C. L.

ACTON (Hugh W.) & RAO (S. Sundar). **The Diagnosis of Lymphatic Obstruction of Filarial Origin.**—*Indian Med. Gaz.* 1931. Jan. Vol. 66. No. 1. pp. 11–17. With 1 map & 12 figs. on 4 plates. [5 refs.]

This paper on the clinical aspects of filarial obstruction is called forth largely as a protest to pontifical statements made by self-constituted experts with a few months' experience, at the healthiest time of year, of an endemic area. It is pointed out that 8 to 20 or more years' residence in an endemic area is needed before lymphatic obstruction is produced, that immunity of Europeans is not racial but a matter of sanitation and habits, and that microfilariae are as a rule not present in the blood in advanced lymphatic obstruction, but that they may frequently be found from lymph oozing below a lymphatic obstruction when the peripheral blood contains none. It is definitely held that "the microfilaria is in a sheath, is born in the lymphatics and has no power of penetrating through the tissues" [see O'CONNOR *supra*], and it is pointed out that it cannot be accepted that pitting on pressure is absent in the early stages of lymphatic obstruction. The conditions considered as likely to be confused clinically with this last are: Diffuse fibromatosis (dermatolysis) a late and rare stage of von Recklinghausen's syndrome and depicted in text books of tropical medicine as elephantiasis of scalp, face, buttock, or leg; giant urticaria usually traceable to diet, having an eosinophilia of 16 to 60 per cent., much higher than that of filarial obstruction; hypopituitarism with adiposity, the posterior pituitary lobe also being often involved with lack of pressor substances and static oedema; elephantiasis nostras of which white leg is held to be largely a synonym; removal or destruction of lymphatic glands; and macrogymnastia.

C. L.

MATHIEU. Un cas de filariose. [**Case of Filariasis.**]—*Bull. Soc. Méd. Chirurg. Indochine.* 1930. July. Vol. 8. No. 7. pp. 731–733.

A case of varicose groin lymphatics disappearing on resting, hydrocele, and *Mf. bancrofti* in the night blood, in a man who had never left Luang-Prabang, Laos, French Indo-China.

C. L.

MALDONADO MALDONADO (Antonio). Un caso clínico de "Filaria loa" con extracción de un parásito adulto, observado en un individuo procedente de Fernando Póo. [**A Case of Infection by *Loa loa* from Fernando Po.**]—*Medicina Países Cálidos.* Madrid. 1930. Nov. Vol. 3. No. 6. pp. 534–536.

A man of 37 years who probably contracted infection in 1917 in Fernando Po. No symptoms appeared till 4 years later when the worm made itself

evident in the left eye. On extraction it was found to measure 3·25 cm. in length. The blood showed marked eosinophilia and embryos. After the extraction, all the symptoms cleared up. [The degree of eosinophilia is not stated, nor the hour at which the blood was taken for examination.]

H. H. S.

Skrjabin (K. I.), Althausen (A. J.) & Schulman (E. S.). [**First Case of *Dirofilaria repens* from Man.**]—*Trop. Med. & Veterin.* Moscow. 1930. Vol. 8. No. 2. pp. 9–11. With 4 text figs. [In Russian.]

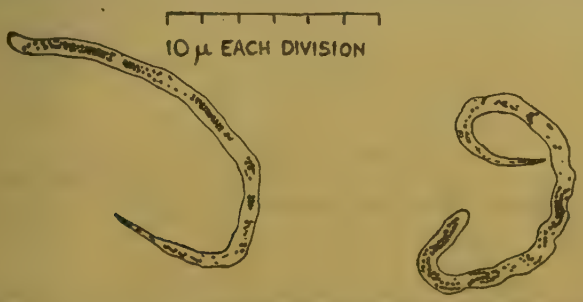
The authors describe a case in which *Dirofilaria repens* ♂ was extracted from a subcutaneous nodule of the right lower eye-lid of a woman. From the history of the case it appears that the patient's child accidentally hit her in the right eye with a stick, with the result that conjunctivitis and later the tumour developed. The worm was identical with the nematode occurring in dogs. Figures are given showing the parasite in natural size, its anterior and posterior ends, and a section of the tumour in which it was found. The histology of the nodule is described.

C. A. Hoare.

Rao (S. Sunder). **New Species of Human Microfilaria (*Microfilaria actoni* sp. nov.) from Eastern India allied to Microfilaria of *Acanthocheilonema perstans*.**—*Indian Jl. Med. Res.* 1931. Jan. Vol. 18. No. 3. pp. 979–981. With 1 plate. [3 refs.]

A single slide from a convict released before the slide was examined and thereafter suspiciously refusing to be re-examined, showed these peculiar microfilariae:

"The microfilariae are devoid of any sheath. They have a rounded head-end and tail-end which tapers to a fine point. The embryos are 140μ to 150μ long averaging about 145μ. The maximum breadth of the body, at about the nerve-ring, is 6μ. The body tapers slightly towards the anterior end and the breadth at the tip is 5μ. The nuclei commence some short distance behind the anterior end of the worm, first in two rows, and more posteriorly there is dense aggregation of nuclei up to the nerve-ring. There is a sharp break at the nerve-ring, and then posterior to it for a short length, the nuclei are densely packed. After about one-third to half the length of the microfilaria, the nuclei are less dense and irregularly distributed. The distance from the anterior end to the nerve-ring is 30μ or one-fifth of the length of the embryo. The tail-end of the



Microfilaria actoni sp. nov. Camera lucida drawings of microfilaria stained with haematoxylin and eosin.

[Reproduced from the *Indian Journal of Medical Research.*]

microfilaria is very characteristic. The tail tapers to a fine point, the nuclei occurring to nearly the extreme tip of the tail. These nuclei of the tail are long and rod-like and there results a chain of three (sometimes two or four) rod-like nuclei extending to the tip of the tail. Another feature of this microfilaria is the absence of the central viscus (Innenkörper)."

C. L.

Ochoterena (I.). Contribuciones para el conocimiento de la onchocercosis en Mexico. V. Nota acerca del fototactismo de las microfilarias de *Onchocerca volvulus caecutiens*. [**Onchocerciasis in Mexico : V. Phototropism of the Embryos of** *O. caecutiens*.]—*An. Inst. Biol. Univ. Nac. Mexico.* 1930. Vol. 1. No. 4. pp. 307–308. With 1 text fig.

Noting the abundance of embryos of *O. caecutiens* in the anterior part of the cornea and their diminution in the more posterior parts of the eye the author devised an experiment to test the reason of this and whether phototropism was responsible. He removed a tumour containing a large number of embryos, placed some in Ringer's solution on a slide, the area being shut off by vaseline, and then directed a beam of light on to the slide whereby a central area could be observed with its penumbra and umbra. Two observations were made : in a short time in the first there were 8 embryos in the light zone, one and three respectively in the penumbra and umbra ; in the second with a thicker emulsion there were 14 in the light and two in each of the other zones. The author concludes that phototropism or, as he calls it, phototactism plays a part in determining the localization of the embryos.

H. H. S.

Ochoterena (I.). VI. Estudio anatomico de la microfilaria de *Onchocerca volvulus caecutiens* por medio de las coloraciones vitales. [**VI. Anatomical Study of Embryos of** *O. caecutiens* **by Means of Vital Staining.**]—*An. Inst. Biol. Univ. Nac. Mexico.* 1930. Vol. 1. No. 4. pp. 309–311. With 3 text figs.

A method of comparing various filarial embryos by vital staining and noting the positions of the structures. Thus in the embryo of *O. caecutiens*, starting from the head, the non-nucleated portion occupies 5·1 per cent. of the total length, the pre-nervous region 24·2, the nervous ring is 25·7 from the head and occupies 1·6 per cent., the excretory pore is 34·5 per cent., the cells of Rodenwalt 63 per cent., the anal pore 90, and the nuclear column ends at 95. Analogous measurements being made with other embryos, the whole can be plotted for comparison. As stains the author used carbol methylene blue, neutral red, methyl green pyronin prepared by Gruebler.

H. H. S.

Hoffmann (Carlos C.). Los simulidos de la region onchocercosa de Chiapas (con descripcion de nuevas especies). [**Simuliidae of the Onchocerca Region of Chiapas.**]—*An. Inst. Biol. Univ. Nac. Mexico.* 1930. Vol. 1. No. 4. pp. 293–306. With 15 text figs.

Onchocerciasis is endemic in the south of the State of Chiapas and the author has considered that for future investigators it would be

useful to know what species of Simuliidae are to be found there. He describes the morphology of three species of Simulium, viz., *S. avidum*, *S. virgatum* and a new species *S. pseudohaematopotum*, and three of Eusimulium, *E. ochraceum*, *E. mooseri* and a new species *E. turgidum*. The description is presented in the form of a table so that the various species may be compared and contrasted.

H. H. S.

Davis (L. J.). **A Note on Some Experiments with Agents Lethal to Cyclops.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1931. Apr. 25. Vol. 24. No. 6. pp. 631–633. [4 refs.] [Wellcome Trop. Research Labs., Khartoum.]

Laboratory experiments were made as to the lethal effects in varying concentration of caustic soda, caustic potash, hydrochloric acid, bleaching powder, potassium permanganate, quicklime, builders' slaked lime, and sodium bicarbonate ; and the pH of the solution was tested in every case. A pH of 10 or more was lethal in all cases, this being just about the point where red litmus paper turns blue, and is conveniently produced by adding quicklime or ordinary lime in a strength of 1 in 1,000. [Presumably it was 0·1 cc. of N/1 caustic soda and not 9·1 cc. which produced a pH of 8 in 500 cc. of water.]

C. L.

Botreau-Roussel & Huard (P.). Arthrites puriformes aseptiques dans la draconculose chez le noir. [**Aseptic Purulent Arthritis in Dracontiasis.**]—*Bull. Soc. Path. Exot.* 1930. Dec. 10. Vol. 23. No. 10. pp. 1020–1025.

These authors draw attention to the insufficiently realized damage to the knee which the presence near it of a guineaworm may cause (see Pradhan, above, p. 220), but they insist that, although in these cases the joint contains pus, it is always in their experience sterile pus, and that aspiration suffices in the matter of surgical interference. Of suggested causes of this purulent arthritis, namely the presence of a worm in the joint, arthritis due to worm toxins, a communication between the joint and a neighbouring filarial abscess, and synovial reaction due to proximity of a focus of pus, they favour the last.

C. L.

Chukerbuti (J. C.). **Eosinophilia in Dracontiasis.**—*Indian Med. Gaz.* 1931. Jan. Vol. 66. No. 1. pp. 21–22.

The author reports on over 30 cases of dracontiasis.

Both the normal Leishman stain and the author's " field " modification which dispenses with distilled water, " showed in all the cases a striking alteration of the eosinophilic nature of the granules into different shades of basophilic colour. They look every bit like eosinophiles in all other characteristics. This basophilic tendency of the granules shown by different shades of blue gradually gets deeper and deeper from the time of penetration of the stomach wall by the infective larva to the ultimate selective settlement of the mature gravid female worm somewhere in the subcutaneous connective tissue.

" As soon as the worm dies in the body or is extracted by surgical procedure, the basophilic tendency of the granules diminishes in intensity, until in three or four weeks time the cells regain the normal eosinophilic nature of their granules, though their percentage remains high for two or three months." Presumably the conclusion rests on the final appearance and death of a guineaworm.

C. L.

CEYLON. **Report of the Superintendent, Ankylostomiasis Campaigns, for the Year 1929** [KURIYAN (A. T.)].—*Ceylon Administration Rep. Director Med. & San. Services, 1929.* Appendix pp. C 54–C 60. With 2 maps.

During 1929, 20,856 faecal specimens were examined, having reached the central laboratory in tins, and two slides per specimen were gone over by Stoll's technique. If negative to this Willis's direct gravity floatation technique was used also. The eggs per gram averaged 656 and the percentage infected so found was 85·5. Fifteen days after treatment by oil of chenopodium or carbon tetrachloride in unstated general dosage, 2,574 were re-examined giving an average egg count of 332 and a percentage of infection of at least 59·7. Again, of 23,911 persons examined 97·5 per cent. had some infection or other; 2,891 were re-examined after treatment and 91 per cent. were still infected. A re-survey of over 7,000 persons from districts treated 12 months earlier gave interesting results. The first egg count had given an average of 722 eggs per gram with about 89 per cent. of infected persons, while on examination after treatment the average eggs per gram were 246 and the percentage of still infected about 54. Re-survey a year later gave an average egg count of 619 and an average percentage of infection of about 85. By both series of tests, then, treatment seems to have done nothing towards the radical control of hookworm infection. Nevertheless the following occurs:

" The Director of Medical and Sanitary Services in his annual report for 1928 states :—' The results of the Ankylostomiasis Campaign are now beginning to show themselves. It is very encouraging to record that in some districts of the Central Province the treatment has been so successful that overcrowding of hospitals no longer exists, and in fact some of the wards in Dikoya, Dimbula, Lindula, Maskeliya, Bogawantalawa, and Agrapatna hospitals are almost empty for the greater part of the year.'

" Some of the hospitals and dispensaries in the Island are standing monuments of the primitive sanitary habits of the communities they serve. The present rate of progress of hookworm control is so marked that the day may not be far off when they may be closed for the treatment of the sick."

It is difficult to consider the two sets of facts as necessarily interconnected. Apart from these mass treatments very many received herd treatments during 1929.

C. L.

PALMERLEE (C. A.). **Hookworm Infestation in Mississippi.**—*New Orleans Med. & Surg. Jl.* 1931. Feb. Vol. 83. No. 8. pp. 534–536.

Using " the brine flotation " method, 3,250 stools of patients in hospital are reported on and 15·2 per cent. showed necator infection;

percentage of infection by age was 31 for children under 10, 33 for children over 10, and 12·5 for adults. The percentage of infection in appendicitis was by far the highest [the actual figures are not given]. Treatment in 1928 was by chenopodium, four treatments ten days apart, " the dosage per age was according to the directions on the manufacturer's scale." A year later 69, whether still inmates or not is unstated, were re-examined and 39 or 57 per cent. still had ova. Treatment in 1929 was by " three doses of carbon tetrachloride per treatment, for four treatments ten days apart." A year later 80 were still in the institution [and so presumably could not have been reinfected] and 51 or 64 per cent. still showed ova. This year tetrachlorethylene is being tried.

C. L.

Penso (Giuseppe). Studi sull' anchilostomiasi. Ia Memoria. Sopra un nuovo meccanismo di infestazione degli sclerostomidi. [**Studies on Ankylostomiasis. I. A New Mode of Infestation by Sclerostomidae.**]—*Ann. di Med. Nav. e Colon.* 1931. Jan.–Feb. Year 37. Vol. 1. No. 1–2. pp. 24–27. With 2 figs. on 1 plate. [5 refs.] [Inst. of Med. Parasit., Univ., Rome.]

The author mentions the usual mode of hookworm infestation by skin penetration as described by Looss, and that recorded by Alessandrini of ingestion of the larvae by flies and the passage of them still viable in the insects' faeces. He here notes in a culture the penetration of the root and root fibres of vegetable plants and states that they may lie for a period of days in this position, being kept alive by the moisture present. Such vegetables eaten raw might result in the penetration of the buccal or pharyngeal mucosa by the larvae and their reaching the blood stream in this way. This would explain sporadic infection in individuals who had never lived in an endemic area, the infected vegetables having been transported to the new district. [Presumably, the possible presence of free living nematodes and their larvae had been excluded.]

[Alessandrini's original paper is not easy to understand since he seems to conclude that young, and so presumably rhabditiform, larvae can penetrate the gut of maggots. It seems, however, that thigmotropism has never been observed in them. Penso's microphotographs show larvae within rootlets, but Dr. Scott's comment is well founded since these larvae seem definitely to correspond to mature hookworm larvae neither in shape nor appearance, while one at least recalls a type of larva of free living nematodes which is commonly seen in unsterilized earth cultures.—C. L.]

H. H. S.

Mangiola (Marco). Un caso di anchilostomiasi simulante un neoplasma gastrico. [**Ankylostomiasis simulating New Growth of Stomach.**]—*Policlinico.* Sez. Prat. 1931. Apr. 20. Vol. 38. No. 16. pp. 550–551. [7 refs.]

An excellent example of the adage which every research worker bears constantly in mind : " Be very careful when you are looking for something or you will be sure to find it." A man of 65 years, living in Calabria, complained of vague abdominal pain and weakness for three months. He was pallid and cachectic and a diffuse sense of resistance to palpation over the pylorus [? muscular] was noticed and malignant disease naturally suspected.

An X-ray examination resulted in a report, " pyloric stenosis of the second degree of neoplastic nature." He had never suffered from vomiting and took food without discomfort. Faecal examination revealed ova of hookworm in large numbers together with those of trichuris. Complete cure followed the use of carbon tetrachloride. The diagnostic error is, perhaps, more excusable if, as the author states, " ankylostomiasis is absolutely unknown in the country " (Calabria).

[" Hookworm disease is distributed over the whole of Italy, Sicily and Sardinia. It is found chiefly among farm hands, clay workers and miners." Hookworm Infection in Foreign Countries—Publication No. 6. The Rockefeller Sanitary Commission for the Eradication of Hookworm Disease. 1911. C. L.]

H. H. S.

ARCHER (Vincent W.) & PETERSON (Charles H.). **Roentgen Diagnosis of Ascariasis.**—*Jl. Amer. Med. Assoc.* 1930. Dec. 13. Vol. 95. No. 24. pp. 1819–1821. With 3 text figs. [14 refs.]

Interest in this subject dates from work by Otto FRITZ in 1922. The appearances described are : first and soon after ingestion of a barium meal a cylindrical filling defect in the jejunum, and later a string-like shadow representing the barium-filled alimentary canal of the ascarids. " The parasites will not ingest the barium if the patient has eaten prior to drinking the contrast meal." In discussion Dr. Eugene P. PENDERGRASS pointed out how easy the ascaris eggs were of identification by the microscope, and Dr. Archer replied that several public health workers had told him that the " diagnosis of ova in the stools was quite difficult, contrary to general belief, because ascaris ova resembled vegetable fibres more closely than did the ova of any other parasite." [General belief is right ; but the procedure might prove useful in recognizing infection by a male or males only.]

C. L.

TWINING (Cicely N.). **Infestation by** *Ascaris lumbricoides.*—*Kenya & East African Med. Jl.* 1930. Nov. Vol. 7. No. 8. pp. 233–234.

A Mkidi child of about 8, having vomited 6 round worms, was brought to hospital and given anthelmintics in these doses and at these intervals : santonin grains iij with calomel gr. iij, 2 days ; oil of chenopodium min. vij, 2 days, 8 days, 2 days, 2 days or 5 doses of the oil in all. She passed 475 adult ascarids, thus far surpassing the previous record which was believed to be 300 in Ceylon ; but unfortunately failing to establish one of 500, probably only because her mother removed her from hospital. The greatest number passed in one day was 120 after the third dose of chenopodium.

C. L.

READ (Hector). Untersuchungen ueber Askaris-Toxine. [**Ascaris Toxin Researches.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1931. Apr. Vol. 35. No. 4. pp. 227–237. With 5 text figs. [3 refs.] [Inst. for Ship & Trop. Diseases, Hamburg.]

Ascaris extract administered by mouth to, or injected subcutaneously into, 8 guineapigs produced pneumonic foci with hyperaemia and bleeding, no change in parenchymatous organs or endocrine glands, in some animals a strong eosinophilia, in others appearance of hyaline cells in lung and spleen.

C. L.

Lubieniecki (H.). Zur Frage der Therapie der Oxyuriasis. [**Treatment of Oxyuriasis.**]—*Wien. Klin. Woch.* 1931. Feb. 27. Mar. 13 & 20. Vol. 44. Nos. 9, 11 & 12. pp. 287–290 ; 355–359 ; 384–390. [39 refs.]

Lubieniecki's conclusions are unusual. He holds that there are individual differences in patients so strong that in many but not in all oxyuris multiplies without leaving the gut. For the same reason no one line of treatment suffices. Main stress is laid on prevention of reinfection by mouth and strong purgation kept up for 3 weeks. Drugs may be added, but the local use of suppositories and ointments is held useless, while the solution of the question of a suitable anthelmintic is bound up with those used against other intestinal worms.

C. L.

Kenya and East African Medical Journal. 1931. Jan. Vol. 7. No. 10. p. 309. **Treatment of Threadworms.** [J. H. S.]

Bismuth carbonate gave good results in a stubborn case.

C. L.

Rodhain (J.). Un cas d'infection à trichostrongylus chez un Européen au Congo Belge. [**Case of Trichostrongylus Infection in a European in Belgian Congo.**]—*Ann. Soc. Belge de Méd. Trop.* 1930. Dec. 31. Vol. 10. No. 4. pp. 449–453. With 1 text fig. [7 refs.] [School of Trop. Med., Brussels.]

A woman who had twice lived in the Belgian Congo complained of anal itching and showed eggs identified as those of trichostrongylus, by the study of Byam and Archibald's book [though the table quoted should not have the authority of " Bailey " but of " Clayton "]. The egg illustrated has the typical appearance with morula and shell more sharply rounded at one end. An interesting point is made which the abstracter had mentally debated. In Ringer's solution these eggs measured 88μ to 93μ by 44μ to 56μ, but after floatation in a heavy salt solution 68μ to 84μ by 36μ to 48μ. The shrinkage is considerable.

C. L.

Faust (Ernest Carroll). **The Panama Strains of Human Strongyloides.** —*Proc. Soc. Experim. Biol. & Med.* 1930. Dec. Vol. 28. No. 3. pp. 253–255. [7 refs.] [Dept. of Trop. Med., Tulane Univ., New Orleans.]

From 27 heavy strongyloides infections, believed free from hookworm infection, active larvae were concentrated by the centrifuge, cultured, and the culture examined daily for 3 to 9 weeks.

" The results of this study indicate that 2 of the infections were purely of the indirect type, 13 were direct only, 7 were of a direct type in which dwarf filariform larvae were present in the freshly passed feces, and five were combination of these types. The term *hyperinfective strain* is proposed

for the type in which dwarf (unfed) filariform larvae are passed in the feces, since there is considerable evidence that this is the strain which is responsible for hyperinfection of the host."

C. L.

FAUST (Ernest Carroll). **In Vitro Effects of Certain Drugs on Strongyloides.**—*Proc. Soc. Experim. Biol. & Med.* 1931. Mar. Vol. 28. No. 6. pp. 691–693. [2 refs.]

The author concludes :—

"These *in vitro* tests with the free-living stages of *Strongyloides fülleborni* indicate that crystal violet in 0·1 per cent. dilution is more lethal than acriviolet or acriflavine in the same dilution, while mercurochrome is essentially ineffectual. On the other hand hexyl resorcinol in 0·1 and 0·01 dilutions showed a much greater strongyloidicidal capacity than any of the other reagents, and in 0·001 dilution was practically as potent as crystal violet in 0·1 dilution."

Faust suggests the need of testing hexyl resorcinol especially on the parasitic stage in infected hosts.

C. L.

ZSCHUCKE (Johannes). Therapeutische Versuche mit einer Simultanbehandlung mittels Tetrachlorkohlenstoff und Ascaridol. [**Simultaneous Treatment by Carbon Tetrachloride and Ascaridole.**]—*Arch. f. Schiffs- u. Trop.- Hyg.* 1931. Mar. Vol. 35. No. 3. pp. 138–145. [29 refs.]

This is an expansion of work already reported (*ante*, p. 180), but unfortunately it is not stated that certain important details were the same in both cases. The ascaridole was given either in gelatin capsules or in castor oil and the carbon tetrachloride either in capsules or a 10 per cent. by weight emulsion. Treatment in all was given to 250 persons in these various ways ; but for those here reported on [the total number seems nowhere stated for multiple infections were doubtless present] the carbon tetrachloride seems to have always been given in emulsion in doses of 30 cc. to 50 cc. for a man of 60 kilos or 1·9 cc. to 3·1 cc. (3 to 5 gm.) of carbon tetrachloride on an empty stomach, salts one or two hours later, and an hour later food whether the bowels had opened or not. In all treated, infection was established by seeing the eggs. There was egg counting, presumably again by Stoll's method, before and at an unstated interval after treatment and there were evidently further treatments presumably till no more worms came away.

Hookworms : 32 persons treated : 1,522 worms recovered, 1,510 or 99·2 per cent. after the first treatment ; 77 per cent. within 24 hours, 20 per cent. from 24 to 48 hours and 3 per cent. later. Of the 34 [sic] treated 33 were made worm-free, the other was rid of 86 per cent. of his worms judging by worm counts, by which criterion too egg production was exactly proportionately lessened so that the drug did not interfere with egg production. [This conclusion apparently implies that second counts took place within a few days of treatment ; and will be accepted by those who agree that examination of 1-100 gm. (or 1-200 gm. in Stoll's modified method) of faeces can measure the egg content accurately when 1 gm. of faeces contains only 21 eggs, as was held to be the case here.]

Ascaris : 9 persons treated, 59 worms recovered, 56 or 95 per cent.

by the first treatment; 16 per cent. within 24 hours, 57 per cent. from 24 to 48 hours and 27 per cent. after 48 hours. 7 of the cases were disinfested and 90 per cent. of the worms [total unstated] removed from the other three.

Trichuris: 10 infected persons treated, 7 worms recovered in all, 6 after the first treatment.

The work was done in a sleeping sickness camp in Fernando Po.

C. L.

Boyé (R. P.). Essais de déparasitage méthodique des porteurs de nématodes intestinaux. [**Attempts to deparasitize Intestinal Nematode Carriers.**]—*Bull. Soc. Path. Exot.* 1931. Jan. 14. Vol. 24. No. 1. pp. 41–45.

Boyé has tested pulverized, and at least partly particulated, thymol given in capsules, each capsule containing

Powdered thymol	0·25 gm.
Phenolphthaleine	0·02 ,,
Talc	0·10 ,,

Liquid diet was given for 3 days; and on the first of these 0·4 gm. of calomel, on the second 20 capsules [thymol 5 gm. or 75 grs.], on the third the diet only. Of the 43 treated, 29 or two-thirds were disinfested, as far as the tests determined, apparently in two treatments and 20 in one. In detail: 20 of 23 hookworm cases were cured [? two treatments] or 87 per cent., 15 of 27 trichuris cases or 56 per cent., and all of 4 ascaris cases. Diagnosis was by one, two, or rarely three, smears of unnoted size examined with a mechanical stage and it is noted that the cures must really be somewhat below this figure.

C. L.

Naito (K.). Die Massenabtreibung der Parasiten des menschlichen Körpers. [**Mass Treatment for Parasites of Man.**]—*Jl. Public Health Assoc. Japan.* 1930. Dec. Vol. 6. No. 12. pp. 1–2.

Since 1924 the treated have numbered 4,548,519, and for the last four years over a million annually. The method is really mass treatment not herd treatment, being applied only to those whom faecal examination by smear, sedimenting, or floating has shown to be infected. The treatment for ascaris has been "Herba digenae" 5 to 15 gm. daily, or santonin 0·05 to 0·08 gm., for hookworms thymol 2 gm., oil of chenopodium 1 gm. or carbon tetrachloride 2 to 3 gm. Results, comparative or total, are not given. The widespread manuring of fields with human faeces is noted and references given to advised lay-outs for privies, which have already appeared in the Journal.

C. L.

Africa (Candido) & Lucker (John T.). **Treatment of Experimental Trichinosis in Rabbits with Neutroflavine.**—*Proc. Soc. Experim. Biol. & Med.* 1931. Jan. Vol. 28. No. 4. pp. 432–434.

Having ascertained that normal rabbits tolerated daily intravenous injections of 1·5 cc. of 1 per cent. neutroflavine in water, three rabbits were fed with about 8,000 decapsulated larvae of *Trichinella spiralis* each,

NUMBER OF TRICHINAE FOUND IN SERIES 1.

——	Tongue	Masseter	Diaphragm	Intercostals	Thigh	Total
Rabbit 1 (7 intravenous and 5 intramuscular injections)	5	9	5	0	1	20
Rabbit 2 (12 intravenous injections)	0	0	0	0	0	0
Rabbit 3 (Untreated)	69	51	34	5	5	164

obtained by pepsin digestion of the muscles of a trichinous rabbit. The results of such treatment are shown in the accompanying table, fourteen microscopic preparations being examined in each case from each muscle.

C. L.

VAN CREVELD (S.). Een bijzondere vorm van ascariasis.—*Nederl. Tijdschr. v. Geneesk.* 1931. Feb. 21. 75th Year. 1st Half. No. 8. pp. 890–902. With 2 figs. on 1 plate. [Refs. in footnotes.]

DAS (K. K.). A Note on Blood Changes in Filariasis.—*Indian Jl. Med. Res.* 1931. Jan. Vol. 18. No. 3. pp. 813–816. [1 ref.]

EICHHORN (M.). Bilharziosis der urinewegen.—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1931. Apr. 1. Vol. 71. No. 4. pp. 373–375. With 1 plate.

JONES (W. J.) & BUNTING (C. H.). Invasion of the Fallopian Tube by *Oxyuris vermicularis*. Report of a Case.—*Arch. Pathology.* 1931. Feb. Vol. 11. No. 2. pp. 229–235. With 2 text figs. [16 refs.]

KOBAYASHI (Hidekazu). Studies on the Structure of the Reproductive Organs of the Trematoda. (Report I.) On the Male Genital Organs of *Fasciolopsis buski* and *Fasciola hepatica*.—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1930. Nov. No. 308. [In Japanese. With 1 plate & 2 text figs. English summary pp. 66–71.] [Govt. Med. College, Taihoku, Formosa.]

MITRA (Subodh). Filarial Affection and its Treatment with Deep Röntgen Therapy.—*Brit. Jl. Radiology.* 1930. Nov. Vol. 3. No. 35. pp. 521–523.

MOHAMMED (Abdel Shafi). The Secretory Glands of the Cercaria of *S. haematobium*.—*Ann. Trop. Med. & Parasit.* 1931. Mar. 31. Vol. 25. No. 1. pp. 99–105. With 4 figs. [12 refs.] [School of Trop. Med., Liverpool.]

O'CONNOR (F. W.), GOLDEN (Ross) & AUCHINCLOSS (Hugh). The Röntgen Demonstration of Calcified *Filaria bancrofti* in Human Tissue.—*U.S. Nav. Med. Bull.* 1931. Jan. Vol. 29. No. 1. pp. 17–25. [11 refs.]

PRAWIROHARDJO (R. Sarwono). De mijnworminfectiedichtheid in kampong Tjiasem Kaler (Regentschap Pandegland).—*Geneesk. Tijdschr. v. Nederl. Indië.* 1930. Dec. 1. Vol. 70. No. 12. pp. 1219–1227. With 2 text figs.

RENAUD. Syndrome pseudo-tétanique observé chez un enfant atteint d'ascaridiose.—*Bull. Soc. Path. Exot.* 1929. Oct. 9. Vol. 22. No. 8. pp. 747–748.

WALLS (E. S.). Ovipositing in *Strongyloides stercoralis*. [Correspondence.]—*West African Med. Jl.* Lagos. 1931. Jan. Vol. 4. No. 3. p. 73.

ERRATUM.

Vol. 27, p. 963, CAWSTON summary, line 2. Between " and " and " in man," insert " has been reported."

REVIEWS AND NOTICES.

KUDO (Richard Roksabro) [D.Sc., Assistant Professor of Zoology, University of Illinois]. **Handbook of Protozoology.**—pp. x+451. With 175 figs. 1931. London: Baillière, Tindall & Cox, 7–8, Henrietta Street, Covent Garden, W.C.2. [25s.] [Review appears also in *Bulletin of Hygiene*.]

The aim of the author has been to provide a handbook wherein the student would find introductory information on the common and representative genera of all the groups of both free-living and parasitic protozoa. As is but natural, the organisms which are found in the bodies of host animals occupying various rôles as saprophytes, commensals or true parasites, have received considerably more attention than the free-living forms from which unquestionably they have evolved. Several excellent textbooks and monographs are available which cater more or less comprehensively for the student of the purely parasitic forms; Kudo, however, has taken rather a wider view and has shown the manner in which the ecto- and endo-parasitic protozoa are related to the other genera comprising the phylum. The fact is stressed that the information concerning any given species is of an introductory character and far from an exhaustive survey, but is intended, in association with the bibliographical references at the end of each chapter, to serve as a guide or indication of the lines on which further knowledge may be acquired.

The first three chapters deal with general considerations such as the historical aspect, the morphology, physiology and various methods of reproduction. Chapter IV, of 21 pages, gives an outline of the classification based on that formulated by BÜTSCHLI and modified by other workers in this field. From Chapter V onwards, including the larger part of the book, the different classes, orders, families and genera are considered seriatim and, in the case of certain genera which are of common occurrence, e.g., Amoeba, Entamoeba, Euglena, several species are mentioned. There are a large number of illustrations which are grouped together in 175 figures; these are clear and accurately drawn, but have been reproduced at too low a magnification so that to discern the detail a reading glass may be necessary. In this section there occur some minor discrepancies which, in a book of an encyclopaedic character, assume an undue importance. The book concludes with an all too brief appendix on the collection, cultivation and observation of protozoa.

To the average medical practitioner, who is concerned mainly with the pathogenous forms, this handbook can have little appeal, but in the case of the medical or veterinary protozoologist or those who are field workers in pure and applied biological sciences it should prove extremely useful.

J. G. Thomson.

NAPIER (L. Everard) [STILLING (E.) transl.]. **Leishmania.**—*Handbuch der pathogenen Mikroorganismen.* [Kolle u. Wassermann.] 1930. Band 7. Lfg. 47. pp. 1497–1560. With 7 figs., 2 charts & 1 coloured plate. [12 pages of refs.]

The author has presented his readers with an excellent general account of the various infections and diseases caused by parasites of the genus *Leishmania*. It is based on his own extensive experience and on the published work up to the end of 1928 or beginning of 1929, when presumably the article was finally sent to press. As few changes have occurred since then, it can be accepted as the most up to date and accurate treatise on the subject.

C. M. Wenyon.

FRÓES (Heitor Praguer). **Do " Mycetoma pedis " no Brasil.** [Mycetoma pedis in Brazil.]—Trabalho do Laboratorio de Histologia da Faculdade de Medicina da Bahia e do Laboratorio de Analyses Medicas do Autor. [Thesis.]—pp. iv+300. With 95 figs. on 48 plates. 1930. Bahia: A Nova Graphica.

This careful and detailed record will take a high place among works dealing with pathogenic fungi. Mycetoma pedis—a better name than Madura feet—is not so common in the West as in the East, but the present monograph is based on a study of 57 cases dating from Pacheco MENDES' patient observed in 1894. 23 of these occurred in S. Paulo, 17 in Bahia, 5 in Rio de Janeiro; the remaining 12 were divided among 7 States. The scheme of research planned by the author was as follows: 1. A questionary to the principal hospitals, dermatologists, surgeons, pathologists, etc., in Brazil asking for details of any patients suffering from this disease under their care in the past or present. 2. Examination of the records and case-sheets of the chief hospitals for published or unpublished cases. 3. Examination of sections of tissues taken from such patients, from museums or pathological cabinets of hospitals. The returns were surprisingly meagre. It is true that records of 12 patients were obtained from the Santa Isabel Hospital between 1870 and 1930, and five from a hospital in S. Paulo, but a search among the records of 38,764 patients at the Military Hospital did not produce a single case.

The present work, after this preliminary statement of the plan of study proposed, opens with a short chapter on the synonymy and history of Mycetoma pedis in Brazil; this is succeeded by a tabular presentation of the main discoverable points of each of the cases traced. Discussion of aetiology shows the frequency of trauma as the accredited starting point, often the prick of a mimosa thorn or a splinter of wood, occasionally the bite of an insect or a snake. Two-fifths of the patients were between 10 and 20 years of age and half were between 20 and 40 years. With so small a total of cases it is not possible to estimate the influence of sex or race. The fungi responsible for the Brazilian disease are *Nocardia bovis*, *N. madurae*, *N. brasiliensis*, and a closely allied species, *N. bahiensis*, and another species allied to *N. somaliensis*.

On anatomical and clinical grounds three forms of the condition are described, the suppurating, the cystic, and the sclerosing, but the author proposes a division into Phaneromycetomas, with sinuses discharging granules, and Cryptomycetomas without elimination of granules. Diagnosis rests on the clinical condition, on pathological and microscopical findings, aided, when possible, by cultivation of the fungus. On this part there is little calling for comment, but a useful key to the identification of those species causing the disease in Brazil is presented. Animal inoculation did not prove of much service.

Differential diagnosis from a number of conditions is considered. Prognosis *quoad vitam* is favourable, *quoad functionem* unfavourable; treatment is almost exclusively surgical, though if seen in the early stage (which is very rare) the patients are benefited by iodide. Prophylaxis may be summed up in three words, " Never go barefoot " (Não andar descalço).

In a second part of the monograph the author details minutely three cases under the care of others, dealing with the pathological histology, and experiments in animal inoculation and fungus culture. This section is followed by one with brief accounts of six unpublished cases and one of pseudomycetoma or angiokeratoma—a tumour-like hyperplasia of the cuticular and subcuticular structures with increase of blood vessels, but with absence of fungus growth.

The work is illustrated with an abundance of photographs and microphotographs. Some of the former depicting the macroscopical conditions are excellent; the latter are less successful. All pathologists who have studied the morbid histology of fungoid and granulomatous lesions know

the difficulty, one might say the impossibility, of adequately reproducing the details of structure by microphotographs and it would have served the purpose better if a few coloured plates of stained sections had replaced the large number of barely decipherable photographs. With this reservation, the work and the form of its production are worthy of high praise.

H. H. S.

DE ARAUJO (Eduardo Lins Ferreira) [Assistente e Chefe de Laboratorio da Cadeira de Microbiologia—Docente Livre de Microbiologia]. **Do Mycetoma Pedis no Brazil.** [Mycetoma pedis in Brazil.] These sorteada para concurso de Professor Cathedratico da Cadeira de Medicina Tropical.—pp. xviii+331. With 28 plates (4 coloured). 1930. Bahia: Officinas da Livraria "Duas Americas," Praça da Inglaterra.

This professorial thesis is the second large and comprehensive work to be published recently on the subject (see above). The present differs, however, from the former in being a general review and compilation of all the published accounts of any note available. It consists of 15 chapters or sections. The first is a chronological study (71 pages) summarizing general opinions from the first reference to the disease by R. de G. DAUNT in "Medical Letters from Brazil," published in the *Dublin Medical Press*, 1861, under the title "Endemic Disease of the Foot in Brazil," down to 1930. Next follow sections on the Aetiology and Pathogeny, with epidemiological data, and a short clinical study. Clinical classification is on the same lines as those of FRÓES into tumour formation with granules (mycetomas), tumours without granules (paramycetomas), fistulous forms with granules, and encysted forms. The author presents in schematic tables the various aetiological classifications which have been proposed from time to time, by LANGERON, BRUMPT, CHALMERS and ARCHIBALD, CHALMERS and CASTELLANI, and GAMMEL, with a tabular synopsis and distribution in Brazil according to State. A botanical classification is given later in the book. More detailed study ensues on diagnosis, the grains, culture of the fungi and the anatomical and histological changes set up. Before dealing with prognosis and treatment, he returns again to speak of the three main subdivisions of mycotic-like conditions: Paramycetomas (v. s.), Pseudomycetomas distinguished (by CHALMERS and ARCHIBALD) from the last in absence of eosinophile bodies in the tissues, and Neomycetomas or epithelial new-growths of malignant type and of mycotic aspect but showing neither eosinophile bodies nor mycelial filaments. The work ends with a fairly full bibliography of over 300 titles. The whole is well reproduced and clearly printed with good photographs, microphotographs and coloured plates showing the pathological histology. It forms an excellent companion volume to that of Dr. FRÓES, the former giving a thoughtful survey of the whole subject, the latter dealing more with detailed personal research.

H. H. S.

SOERIOBROTO (Mas Antariksa). **Schommelingen in het aantal leucocyten, tevens een studie over tropenlymphocytose.** [Fluctuations in the Number of Leucocytes together with a Study of Tropical Lymphocytosis.] [Thesis for Doctorate in Medicine, Univ., Leiden.]—pp. xii+132. 1930. Leiden: N. V. Boek- en Steendrukkerij Eduard Ijdo.*

This thesis deals largely with the value of the total and differential leucocyte blood counts and the investigations were carried out on 26

* A version has also appeared in *Acta Leidensia* (*Scholae Med. Tropicae*). 1930. Vol. 5. pp. 1-82.

individuals, of whom 10 were examined in Rotterdam and 16 in Batavia. It is a thesis which is largely destructive of faith in the counts, more particularly in their relation to supposed physiological alterations of the blood picture; but it includes also a qualified condemnation of pathological findings. Observers have not hitherto taken into account the great oscillation in absolute and relative numbers among leucocytes which is taking place constantly, one might almost say every minute, and which may in certain cases attain 100 per cent. A work which made this clear was that of DOAN and ZERFAS on rhythmic variations of the white blood cells. The time interval used by these authors was one of examination every 15 minutes, while those of the present author, who confirms the findings, were as short as 7 to 10 minutes. The conclusions give a good idea of the extent of the study made and may be summarized as follows :—

Fluctuations in the number of leucocytes in the circulating blood are occurring at every instant and are independent of the intake of food, of posture, of increased heart action and of exercise. The discovery of this fluctuation, which, moreover, is highly individualistic, largely discounts the generally accepted data regarding blood cell composition under varying physiological and pathological conditions. It is probably a fluctuation resulting from divergent influences of the autonomic nervous system. Such a state as tropical lymphocytosis does not exist.

The deductions certainly are of rather a sweeping nature seeing that they are based on 26 individuals only. Our author, however, recognizes that a large amount of work on the subject is yet required.

W. F. Harvey.

BONNE (Willem Meindert). **De croupeuse pneumonie in Nederlandsch-Indië.** [Croupous Pneumonia in Dutch Indies.] [Thesis for Doctorate in Medicine at the Medical High School, Batavia.]—115 pp. Batavia: C. Druk van G. Kolff & Co.

The author's interpretation of the term "croupous pneumonia," as observed by him in Java, differs greatly from that current among English-speaking nations. A condition in which red hepatization is rare, in which the sputum is not viscid and is seldom "rusty," where the pneumonia is of a "subacute" or "bronchopneumonic" type, and the temperature falls by lysis in nearly half the cases (46·38 per cent.) clearly cannot be compared with croupous or lobar pneumonia—pneumococcal infection of the lungs—as seen in Britain.

His findings show that pneumococcal infection accompanied by subacute pulmonary reaction is associated with *Str. pneumoniae* type I; and that when meningeal symptoms are present, with jaundice and tissue haemorrhages, type III is most common.

W. F. Harvey.

LANGERON (M.) [Chef de Laboratoire à la Faculté de Médecine de Paris] & DU NOYER (M. Rondeau) [Assistant à la Faculté de Pharmacie de Paris]. **Coprologie Microscopique.** [Microscopical Coprology.] 2nd Edition.—180 pp. With 201 figs. & 3 plates. 1930. Paris: Masson et Cie. Editeurs, 120 Boulevard Saint-Germain. [24 fr.]

The second edition of this small monograph describes solutions used in faecal examinations, methods of collection, of preparation, of microscopic

examination, and of egg counting. Floatation methods for concentration of nematode eggs are evidently deliberately rejected since they find mention only in the bibliography. Illustrations of the microscopic bodies found normally or abnormally in faeces are most lavish, for some of the numbered figures contain a score or more of different objects, mineral, vegetable and animal. Though the published source from which the illustrations are taken is not always acknowledged when it is not original, these figures are likely to prove of considerable value to those who are puzzled as to the identity of curious objects they find in faeces. Unfortunately an exception must be made in the case of adult hookworms. The figures given will not greatly help the student either in a recognition of the worms or in an appreciation of the structures on which their differentiation must be based.

Clayton Lane.

VENEZUELA. **Conferencia Sanitaria Nacional de 1930.** [National Health Conference, 1930.]—Estados Unidos de Venezuela.—Ministerio de Salubridad y de Agricultura y Cria.—544 pp. With 1 folding map & 1 folding plate. 1931. Caracas: Tipografía Americana.

This volume comprises the reports from 13 of the 20 United States of Venezuela as regards the prevalence of hookworm infection. The results given in detail of the individual States are mainly of local interest but the following general information of Venezuela as a whole may be of value. Altogether returns were made from 273 districts ; a total of 20,387 persons were examined and 10,550 or 52 per cent. were found positive. For statistical purposes the index of prevalence is given under the three heads of sex, race and age, and these are again presented under 4 groups : mixed population, school children, hospital patients (in 4 States only), and inmates of barracks and prisons (in 5 States).

Of the mixed population, 11,088 were examined and 6,596 (59 per cent.) were positive. The percentage infected varied greatly in the different States, being as low as 12 in Nueva Esparta, as high as 91 in Zamora. Of 8,277 school children examined 3,163 (38 per cent.) were positive, and again the prevalence varied within wide limits, 17 per cent. in Mérida, 82 in Táchira. The number of hospital patients examined was only 164, and 92 were positive ; in the barracks and prisons 699 out of 858 (82 per cent.). As regards sex, the numbers examined were nearly equal, 9,629 female, 10,758 male ; 48 per cent. of the former and 55 per cent. of the latter proved positive. For obtaining statistics of race infection, the population examined was divided into whites (6,619), half-castes (12,386), negroes (1,225), and Indians (157). The percentages of infection were respectively 49, 52, 60 and 56, but it will be noted that the relative proportions of the constituent races were 32·47 white, 60·75 half-castes, 6·01 negro, and 0·77 Indian.

Lastly, the question of age ; below 5 years 1,221 were examined and of these 573 (47 per cent.) were positive ; between 5 and 10 years 4,960 examined, 2,110 (43 per cent.) positive ; 10 to 20 years 8,431 examined, 4,197 (50 per cent.) positive ; 20 to 50 years 4,944 with 3,227 (65 per cent.) positive, and a little more than half (53 per cent.) of 831 above 50 years were positive. Of the total of 10,550 infected, the percentages were : under 5 years 5·43, 5–10 years 20·0, 10–20 years 39·78, 20–50 years 30·59, over 50 years 4·2.

It will be seen from the returns that ankylostomiasis is widespread in Venezuela, and that though the proportion infected varies much in different districts, the actual distribution is nearly the same in both sexes, in all races and at all ages.

H. H. S.

KHALIL (Mohamed) [M.D. (Egypt), Ph.D. (London), M.D. (Brux.), M.R.C.P. (London), Professor of Parasitology, Faculty of Medicine, Cairo]. **The Bibliography of Schistosomiasis (Bilharziasis) Zoological, Clinical and Prophylactic.**—The Egyptian University. The Faculty of Medicine. Publication No. 1. pp. x+506. With 1 plate. 1931. Cairo. Egyptian University. [30 P.T.; 6s.]

Dr. Khalil having collected, up to the end of 1930, 2,649 references to papers on schistosomiasis, felt that the time had come to make these accessible in print. He does not claim completeness for his Bibliography, but invites interested workers to collaborate by sending him notes of corrections or additions for a revised edition which he hopes to issue in a short time. Dr. Khalil has drawn on the resources of the Faculty of Medicine, Cairo, where he had access to the late Professor Looss's helminthological library, and on those of the Institut für Schiffs- und Tropenkrankheiten, at Hamburg. He has also made free use, with full acknowledgments, of such recognized tools of medical bibliography as the *Index Medicus*, the *Surgeon-General's Catalogue*, etc. In relying in two instances on these tools he has, however, been ill-served, in that they have misled him into including two papers by EISENBARTH and NOTTER on schistosome monsters.

The Bibliography is arranged first by Authors (pp. 1–232) and then by Subjects (pp. 233–503), the Subject section being classified under, and sub-divided within, the five main headings—1. General; 2. Historical and Reviews of Literature; 3. Zoological; 4. Schistosomiasis (Clinical); and 5. Prevention. Comparison with Professor LEIPER'S "Bibliography of Bilharziasis" published in 1915 shows the rapid growth of literature on bilharziasis, for Professor Khalil gives more than four times the number of references listed by Professor LEIPER. The increase in output of authors is also striking. The late Professor Looss, for instance, with the classification of the Distoma and the working out of the life history of *S. haematobium* to his credit, provided only 23 entries in as many years, while in rather less than half that time a modern writer has run up a score of over 100 title entries against his name. Professor Khalil has done good service therefore by bringing all the recent references together, and though his Bibliography may not be a monument of exactitude, it is likely to have a very considerable value for other workers in the same field.

R. L. S.

LEWIS'S MEDICAL & SCIENTIFIC CIRCULATING LIBRARY. **Supplement to Catalogue, 1928–1930.**—112 pp. 1931. London: H. K. Lewis & Co., Ltd., Gower Street, W.C.1. [2s. net (To subscribers 1s. net).]

This printed Supplement to the main Catalogue of Lewis's Library contains entries for some 3,000 medical and scientific books in English added to the Library in the period 1928–1930. The general arrangement of the main Catalogue has been followed, an authors' list with titles (90 pp.) preceding an index of subjects (22 pp.). For books in English published outside Great Britain the place of publication is given, and as might be expected American books provide the bulk of such entries.

R. L. S.